

COAL AGE

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Coal Production Greatest in History

More Coal Is Stored in the Bins and Cellars of the Consuming Public Than in Any Preceding Year

PRACTICALLY every section of the United States reports a scarcity of fuel. Cooler weather is awakening people to the seriousness of the situation more definitely than all the alarming newspaper talk that has gone before. However, more coal is stored in the bins and cellars of the consuming public than in any preceding year. This fact is the one truth on which all hope hangs.

Here and there, from day to day, the statement is made that coal is being held back, that production is lagging, that the mine owners are not expending their greatest efforts to relieve the situation. The fact of the matter is coal production is running at a greater rate of output than ever before. This is true notwithstanding the unwisdom of the price-fixing policy at Washington.

New York, New Jersey and the New England states depend largely on anthracite, especially for domestic purposes. The output of this grade of coal will show an increase of not less than 5 per cent. and probably as much as 10 per cent. However, anthracite constitutes but one-seventh of the country's fuel production, and therefore it is the bituminous production with which the people are most vitally concerned.

The production of bituminous coal so far this year shows an increase of about 10 per cent. over the production for the corresponding period of last year, and last year's tonnage exceeded that of the year before by about 13 per cent. Thus the tonnage of 1917, if the present rate of production continues, will exceed that of 1915 by nearly 25 per cent.

DURING the past eight months the daily output of bituminous coal has averaged 1,784,933 tons. This figure means little to the ordinary individual, but loaded in 50-ton railroad cars, each 40 ft. long, this coal would fill 35,698 cars, or would form a

train 270 miles long. The present daily output indicates a production of all grades of coal of approximately 660,000,000 tons for the year 1917. Again, using railroad cars to visualize this enormous output, we find that this total tonnage would fill 13,200,000 cars, or form a train 100,000 miles long—long enough to extend four times around the earth at the equator.

The present production of coal is certainly not small, but present demand is abnormally large, and whether or not the nation's fuel problem is satisfactorily solved this winter depends largely on the care and intelligence of the people who burn the coal. One authority estimates that 20 per cent. of the nation's fuel output is used for domestic purposes; 80 per cent. is consumed by railroads and industrial plants. Fifteen million people this year will shovel more than 130,000,000 tons of coal into kitchen ranges and household furnaces; several hundred thousand firemen will utilize approximately 400,000,000 tons of coal to keep our industrial plants and our transportation lines running at full blast.

IT is evident, therefore, that economical firing can greatly relieve the situation. Householders can save millions of tons of coal by keeping their furnace doors and joints airtight and all interior heating surfaces free from soot. They must learn to properly regulate the fire by drafts and never open the furnace door except to fire. They must keep the windows and doors of their homes tight and be saving with hot water. Open grates should be abolished entirely and fewer rooms in our homes heated. People used to sleep in cold bedrooms and they were hardier and healthier.

The production of coal is large and will meet all requirements if each one of us will do our part in saving on consumption.

The daily haulage report (Fig. 2) needs little explanation. It provides an incentive to the haulage boss to keep track of what each driver and motorman accomplishes each day. The haulage boss is always an important member of the organization and results must be had from him. He should keep an intelligent record of each day's work and should be a man of sufficient capacity to place him in line for promotion to the position of assistant mine foreman.

Coal companies are usually more careless about supervising stables than any other part of the operation, yet stables should be under close observation. It is a common occurrence to find stables so neglected that grain is wasted and stolen, grain sacks not returned for credit, stock not properly cared for and, at times, the barn being made a center for drinking and other bad conduct.

The stable boss should be held strictly accountable for the condition of livestock and should promptly report any accident or misuse suffered by stock when returned from the day's work. He should keep a record (Fig. 3) of grain and hay used and this record should tally with that of the office. His cost per head should be shown him each month. He should be visited at odd times, especially nights, and the presence of any outside stock should be noted. Fat hogs found hanging about a stable can usually be traced as property of the stable boss.

Accidents to Tripriders

BY SIGNAL

A common practice in some mines, and one that frequently results disastrously, is that of the tripriders jumping off the locomotive and running ahead of it while it is in motion, to throw switches. I know of instances where trappers are employed, and their doors are right at the switch; but a trapper cannot throw a switch unless he is paid the regular underground labor rate or scale, and rather than pay that the company will allow the triprider to risk his life or perhaps suffer injury.

In my opinion this is false economy on the part of the company, which does not seem to give a thought to the consequences as it is the insurance companies that have to pay the compensation. A more rigid inspection by the insurance companies, not only of the conditions in the mine but also of the habits or practices of the employees, might eliminate a number of accidents.

Another matter requiring attention is that of accidents caused by cars breaking away from trips while the trip is on its way to the bottom of the shaft. Accidents of this nature are of frequent occurrence, some being fatal, while those men who are fortunate enough to escape with their lives are crippled or maimed.

The Coal Mining Laws of Illinois state that "a conspicuous light shall be carried on the front, and a gong, conspicuous red light or white signal board on the rear of every trip or train of pit cars moved by machinery." There may be some mines where this law is followed to the letter, but I have yet to see one. I have seen a signal board put on the rear of trips that could not be distinguished 4 ft. away when the trip would pass.

At some mines I have seen a piece of sheet iron used as a signal on the rear of a trip, but in no case was it painted white. Not one signal of the board or iron type could be seen from a refuge hole as the trip passed.

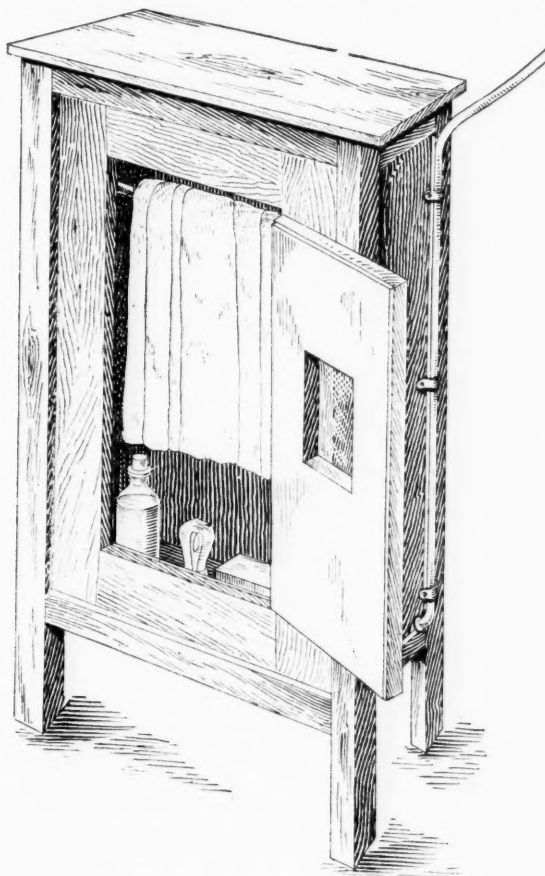
There should be a definite law that all trips moved by machinery must have a gong on the rear of the trip, and to ring loud enough to be heard, or a light clear enough to be seen, some distance away.

First-Aid Cabinet

BY H. CLYDE ELKINS

Star Junction, Pennsylvania

An excellent cabinet in which to keep first-aid material, for use in mines where the air is damp, is illustrated below. The cabinet is about 4 ft. high, 2½ ft. wide and 1 ft. deep. It is lined throughout with asbestos board, in order to prevent the cabinet from catching fire, as there is an incandescent globe



PRACTICAL FIRST-AID CABINET

that burns in an upright position in the bottom of the cabinet, conducted there by conduit wiring.

At or near the top of the cabinet are two iron rods. These are supported by strips on each side of the cabinet, and on these rods can be hung a woolen and a gum blanket. These rods can be taken out readily to remove the blankets and can be replaced easily.

In the cabinet are stocked the medicaments, bandages, splints and plaster necessary for first aid. The heat generated by the incandescent globe keeps the blankets dry and the first-aid materials in good conditions. The door to the cabinet is fastened with a lock, and all the first-aid men have a key to fit.

In the door of the cabinet is inserted an 8 x 10-in. pane of glass. When, in an emergency, it becomes necessary for a person other than the regular accredited first-aid men to gain access to the cabinet, the glass can be broken and the lock opened from the inside.

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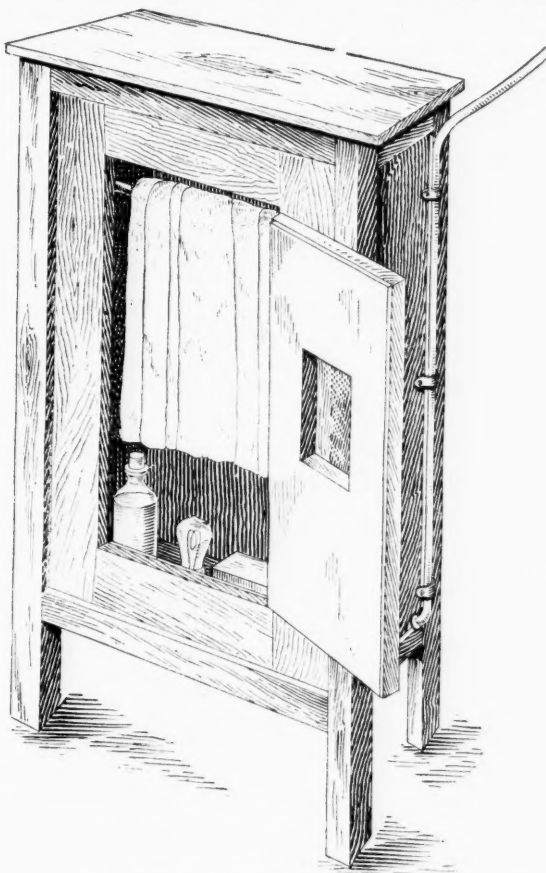
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New Concrete Dwellings Near Pittsburgh

EVER since Thomas A. Edison electrified the lay world with the announcement that he was going to erect a house complete in an hour by pouring concrete into forms, the possibilities of rapid and cheap group dwelling construction have had a popular appeal. Unfortunately, most of the efforts along this line have been little more practicable than was Mr. Edison's scheme, but in Donora, Penn., the Aberthaw Construction Co., of Boston, Mass. is now successfully completing for the American Steel and Wire Co. a group of concrete dwellings that are cheap, serviceable and of good appearance.

METHODS AS IMPORTANT AS ORIGINAL DESIGN

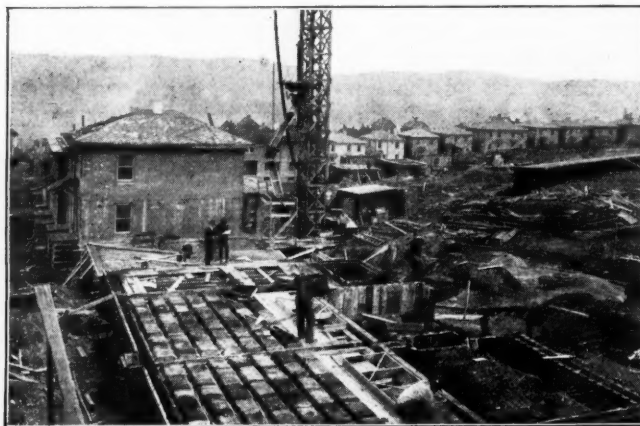
The success of the work is due primarily to the application of orderly contract methods to a design which was carefully schemed before work was commenced. The contractor did not come on the job till a few houses had been completed, at great trouble and expense, by a contractor of less experience. So it is fair to assume that the methods now used are of at least as much importance as the original design. In fact, the contractor considers that in future developments changes in design could be profitably made.

The site of the development is about 40 miles outside of Pittsburgh and is located on a steep hill above the Monongahela River. The property has been laid out into 156 lots, of which 100 are now being built upon;

the remainder will follow next year. Grading was done and streets laid out by the American Steel and Wire Co., concurrently with the house building. The streets will all be paved with concrete, and granolithic sidewalks will be laid.

The houses were designed by the Lambie Concrete House Corporation, of Boston, Mass. Eight different styles of houses are being built, containing some four, some five, and some six rooms, all with a bath and cellar. Of these, a few are being built in pairs with party walls, and all the rest are detached. The contract prices for a house complete range from \$2000 to \$3300, but such costs are based on prices of some time ago and can hardly be used for present comparison. The costs cover gas furnaces and cooking ranges, electric lighting and the usual improved kitchen and bathroom equipment. The average floor area is 26 x 26 feet.

Typical house layouts are shown. All the houses are of the box type with 6-in. solid concrete walls reinforced vertically on both faces and horizontally on the outer face with straight rods, with an intermediate partition wall cutting down the floor spans to 12 to 15 ft. The floors are of the ribbed reinforced-concrete type, with the ribs or beams spanning between the outer and interior walls. These ribs are left exposed in the cellar, but in the other floors plaster board is nailed to strips left in the concrete and a finish plaster coat made.



ON LEFT, EARLY METHOD OF SPOUTING CONCRETE FROM TOWER; ON RIGHT, LIFTING CONCRETE BARROWS BY DERRICK ON HOUSE FORM

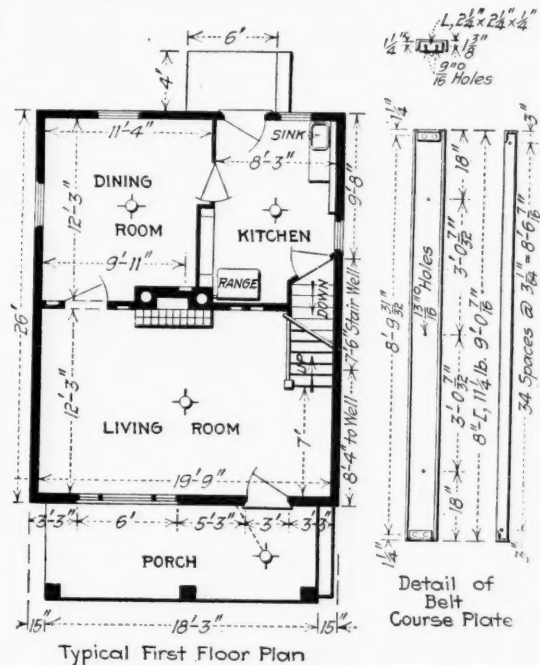
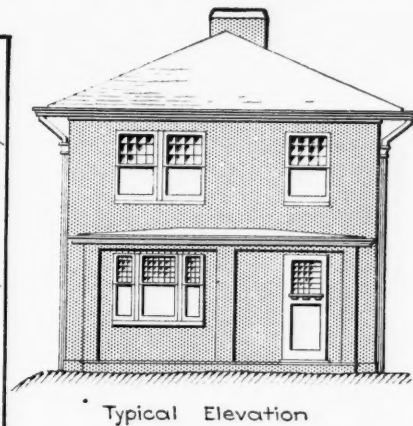
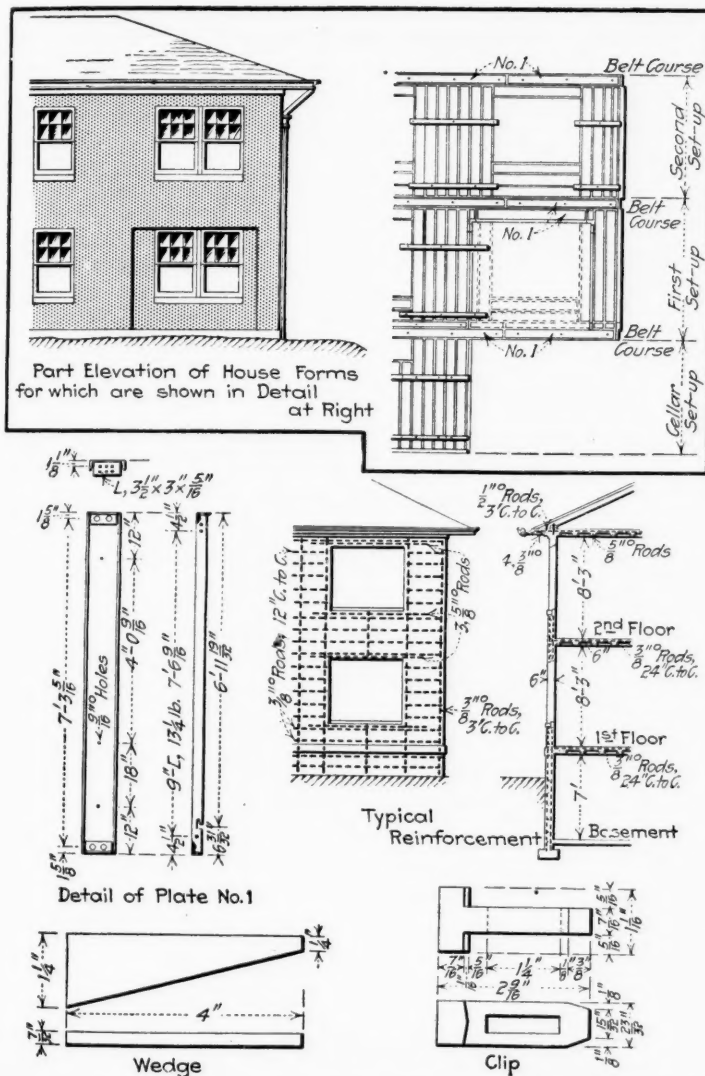
The buildings are finished at the top with a reinforced-concrete cornice in which a gutter is formed, and on top of the concrete ceilings a roof is built up of spruce framing covered with asbestos slate so that the whole of the exterior of the building is fire resisting, with the exception of this frame, the wooden window and door frames, and wood stairs.

An important factor in the effectiveness of the work is the forms. These are of the special steel channel type patented by the Lambie Concrete House Corporation. They consist of 9-in. channels set up vertically and con-

be built inside special wood forms supported, as shown in some of the views, by wooden struts reaching down to the belt-course channel form.

The cellars were excavated with a steam shovel which went down a street, taking out a strip the depth of the houses. The space between the walls of the houses is backfilled after the cellar walls are placed. The digging was in hardpan with some shale, but all of it was taken out by the steam shovel.

The construction of the houses proper is done in groups, to fit the number of sets of forms, which are



HOW THE HOUSES WERE DETAILED AND REINFORCED AND HOW THE STEEL FORMS WERE APPLIED

nected together with clips and wedges passed through slotted holes in the flanges of the channels. At the corner of the building a 4 x 4-in. steel angle is set up, and the forms are lined up longitudinally by means of a steel channel used to form a belt course. This not only fastens the forms of the lower floor, but is bolted into the floor reinforcement and remains in place for a support for the second-story forms and is only stripped at the last when all the concrete is poured. The steel wall forms also support the floor forms, which are steel domes, arrangement being made by which the steel channels on which the domes are laid are bolted to the inner side of the steel wall forms. The cornice has to

taken down as soon as possible and moved on to the next group.

The usual method is to set the forms for one story—wall and floor together—and then to pour the concrete for this section all at once. The progress of the job is limited by the setting of the concrete. To form, pour and strip each story takes about seven days. Working at this rate, the house of two floors and cellar is completely concreted in three weeks, and with the twelve sets of forms on the job, twelve houses are concreted in this period. After this the plumbing, heating, plastering, roofing and finish are done, which take about five weeks more, so that the houses are being completed at



FORMS ARE USED ON ONE ROW AT A TIME; CORNICES HAVE TO BE SUPPORTED ON STRUTS DOWN TO BELT FORMS

the rate of twelve in the first eight weeks and twelve every three weeks thereafter.

During the months of May, June and July the progress made was as follows: 28 complete houses (counting double houses as one) were concreted in 12½ weeks, or at the rate of a house every three days. In the last month quite a number of houses were concreted very quickly—that is, from the day starting erecting basement wall forms on the footings, to and including the day the roofs were concreted. The last houses have gone up as follows: Two in 13 calendar days, one of which could have been done in 12, except for shortage of sand, 2 in 14 days, 5 in 15 days, 2 in 16 days, 2 in 17 days, 3 in 19 days, 1 in 20 days, and 1 in 21 days. Under ordinary conditions these houses could have been built with one set of forms.

CONCRETE TOWER REPLACED BY SMALL HOISTS

In the original contract for the houses, concrete was placed from a high stationary tower, with a chute. This proved inefficient, because of the number of moves that had to be made to control the whole housing area. There is so small an amount of concrete in each house, 125 cu.yd. on the average, and the houses are so scattered that the cost per yard of concrete was materially increased by the cost of the tower erection and construction. After a long study of different methods the Aberthaw company decided on small mobile concrete mixers, which could be placed alongside each house during concrete placing, and small hoists on each building.

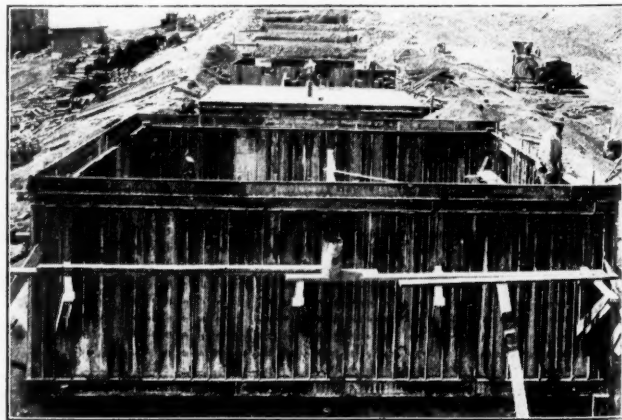
The plant consists of three Koehring "Dandie" one-bag gasoline-driven mixers, two of which are equipped with side loaders, three Sasgen circle swing derricks; two Novo gasoline-driven hoists, which control derrick and mixer. The slag aggregate, and sand, as well as the cement, are delivered to the mixer by means of a truck which brings the material from Aberthaw's unloading yard, located in the yard of the American Steel and Wire Company.

The Sasgen derrick is not used for pouring the basement and first floor, but is used for all concreting above that. It is bolted securely to the best course on one

corner of the building, and the concrete is hoisted in concrete buggies or wheelbarrows. Better results have been obtained with the buggies than with the wheelbarrows. Each wheelbarrow has a hook bolted to the front end and is lifted by the derrick by means of three steel arms with rings on the ends, two of which hitch to the handles and the third into the hook on the barrow, so that it is lifted completely and level onto the floor.

The organization on the job is a superintendent, assistant superintendent, civil engineer, material clerk, two cost clerks, timekeeper, planning department and stenographer. The formwork is under supervision of one carpenter foreman, five squad bosses, two stripping foremen, two move foremen, one reinforcing steel boss, one finish carpentry boss, three concrete bosses and one excavation boss.

It was found advisable to have a squad boss in charge of the carpenters and helpers working on each house. This boss has four carpenters and four helpers on the smaller houses; and on the large double houses, up to seven carpenters and seven helpers. The work has been most economically done when the carpenters and helpers worked in pairs—that is, each carpenter has a helper to assist him in moving the forms, etc. It will be no-



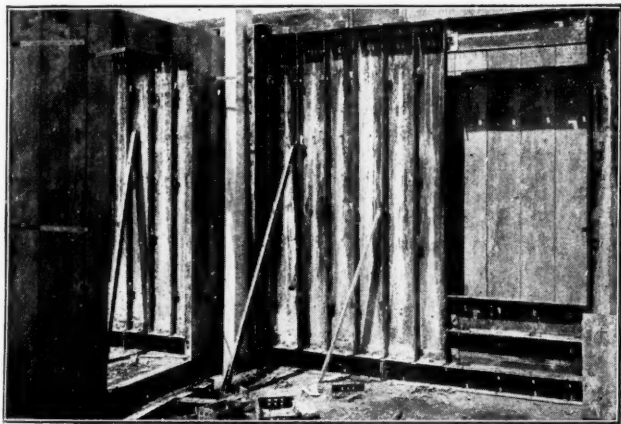
LOOKING UP A ROW UNDER CONSTRUCTION

ticed that the reinforcing steel boss comes under the carpenter foremen. This has been found desirable, as the steel must be placed rapidly whenever the carpenters are ready for it. The planning department on the job lays out progress each day for the next three days and shows which foreman is to erect forms on each house and which concrete gang will pour them.

FIVE CARPENTER GANGS ERECT FORMS

The number of men in a concrete gang varies from 13 to 15, according to the type of house and the amount of concrete to be poured. The number of gangs at work at the same time is five carpenter gangs erecting forms, two concrete gangs concreting forms, two stripping gangs stripping forms, one concrete gang concreting footings, pavings, porch floors, floor steps, chimneys, etc., one digging gang, and one finish carpentry gang, doing the furring, roof framing and roof boarding, erecting door and window frames, sash doors, inside and outside trim, stair laying, floors, etc.

On a large-type 6-room house group this force has taken approximately 1½ days to erect basement walls and first-floor forms, including all boxes, window frames, flues, etc. The basement walls are concreted in about 2½



STEEL CHANNELS BOLTED TOGETHER USED AS FORMS

hours, and the floor is poured in 1½ hours. Stripping and erecting the basement wall forms on the first story takes 1½ to 2 days. The stripping of the first-story walls and erecting the second story and putting on the floor takes about 1½ days, but the putting on of the cornice is a slower operation and adds from half a day to a day to this. Concreting the walls takes about 2½ hours, and the roof about the same length of time.

The steel reinforcement varies from 1½ tons in the smallest type of single houses to three tons in the largest type of double houses. The labor on wall steel has cost to date \$11.90 a ton and the floor steel or beam steel \$7.50 a ton. The cost of labor on wall forms to date has been \$4.30 a hundred square feet and the stripping has been \$2.10. This does not include the moving of forms onto the lots, which has cost about \$55 per house, or about \$1.25 per 100 sq.ft. of form.

The quantities of concrete per house vary from 145 cu.yd. for the largest double house down to 85 for the smaller single houses. This includes all walls and floors, footings, pavings, porches and chimneys. At the present time it is costing about \$2.25 per cu.yd. to place the concrete in the first- and second-story walls, which are 6-in. walls, and it costs the same for the floor slabs. The

smaller houses have about 15 cu.yd. of concrete in the first- or second-story walls, and 6 cu.yd. of concrete in the first and second floors. The roof, including the cornice, has about 10 cu.yd. The cost of erecting the formwork, including handling, stripping and cleaning, is averaging about \$0.0765 per sq.ft. As no lumber is required for the wall forms, this is doubtless considerably cheaper than work of this class could be done in wood.—*Reprinted from Engineering News-Record.*

Operator's Liability in Rescue Work

BY A. L. H. STREET

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Negligence of an operator in creating a condition whereby employees engaged in rescue work are injured or killed is an essential to liability in damages, according to an interesting decision recently announced by the Court of Appeals of Kentucky in the case of *Porter's Administrator vs. Taylor Coal Co.*, 175 Southwestern Reporter, 1014. A person who attempts to rescue another who has been placed in peril through some negligent act of a coal company, and who is thereby injured, has a valid claim against the company. But one who places himself in danger to save another at a mine, although it be in response to a request of a representative of the mine owner, cannot recover for resulting injury where no fault on the part of the operator is established.

In the Kentucky case, a new mine field was being opened near an abandoned one, and to drain water, a ditch was constructed to an abandoned air shaft. A member of the crew descended this shaft and was overcome by blackdamp. In an attempt to effect a rescue, one man after another descended until five were dead, including plaintiff's decedent. Plaintiff's suit was brought on the theory of negligence of the operator (1) in failing to fill up or fence the shaft, (2) failure to discover and warn against the poisonous gas and (3) in ordering decedent to descend into the shaft. All of these grounds were overruled by the Court of Appeals in dismissing the suit. In the absence of statutory requirement, there was no duty to guard the shaft except as against persons falling into it. The shaft, having been abandoned, the operator could not be charged with foresight that members of the ditching crew would descend into it. The court finds that it is doubtful that decedent was directed to descend into the shaft to effect rescue of the men who had gone down before, but holds that if he was requested to do so by his foreman, that request must be deemed to have been understood as a personal appeal to assist in the rescue of comrades rather than in the performance of service for the coal company.

Railroads Buy Fourth Part of Coal

Railroads purchased in 1915, 24.11 per cent. of all coal mined in the United States. Figuring on 40 tons to the car, the railroad purchases represented 3,205,000 carloads or the equivalent of a train of coal 27,315 miles in length, which would belt the earth at the equator and leave enough cars to extend from El Paso, Tex., to New York City.—Eugene McAuliffe at the Alabama Coal Operators Association.

Making Coal Cars in Mines Safe* How To Build a Car So as To Remove the Risks Which Are Inherent in the Coupling of Cars and the Transportation of Coal

BY CARL SCHOLZ

Consulting Mining Engineer, Chicago, Burlington & Quincy Railroad Co., Chicago, Ill.

THE lead of the United States over other nations in industrial enterprises has been obtained by increasing the volume of production and thus decreasing production cost. This has been demonstrated clearly in our methods of transportation. In Europe, owing perhaps to the shorter distances and smaller volumes of traffic as compared with those in America, the capacity of railroad cars does not much exceed the capacity of those in use 50 years ago. The European railroad coal car holds from 25 to 30 tons. During the same period the capacity of our railroad cars has grown from 15 to 70 tons.

The growth at coal mines has been almost in the same ratio. A decade ago 1000 tons was considered the maximum which could be obtained from a single opening. Today we deal with mines running from 5000 to 7500 tons output per day, and, with the innovations that are being worked out daily, it is not unlikely that within another 10-year period the mines which are now regarded as very large will be considered relatively small.

This great increase in tonnage has come about by the adoption of mechanical appliances and the elimination of man and animal power. Transportation is perhaps the most important factor in determining the output of a mine, because the production of coal could be raised to any desired figure by increasing the number of available working faces, were provision made for the transportation of the coal from working face to the railway car. This phase of the work is therefore deserving of the closest study.

SEVERITY OF MINE-CAR HAZARDS IS INCREASING

Within the experience of the present generation of mining men the wooden rail, or "2 x 4," has given place to steel rails of 50- and 60-lb. section; powerful locomotives have taken the place of car pushers and mules; the mine car has grown from a one-half ton tub to a five and six-ton car; roller or ball-bearing wheels are now used instead of the old-fashioned wheel which, if not oiled every trip, squeaked so loudly that the noise could be heard through the mine above the rumbling of the wheels.

It is not possible to adopt a mine-car standard that will fit all conditions. The mining industry cannot adopt standards similar to those that the interchangeability of railroad equipment has made necessary on railroads. Nevertheless, there is a certain need corresponding to each condition, and it is most important that this need be met at each specific mine. The conditions differ so much that the standard for each mine must be varied to suit its particular problem, and roof and floor conditions, thickness of seam, grades, distance of hauling and method of hoisting must be borne in mind when we speak of a standard car.

The design of a suitable car is one of the most important features for the consideration of a mining engineer charged with the development and equipment of a mine. The first consideration should be to so plan the car that accidents will be reduced, and it is gratifying that much has been accomplished in this direction. Nevertheless, there is a great deal of room for further improvement.

A scrutiny of the 1916 Coal Report of Illinois discloses that the total number of mine employees in that state was 75,919, with injuries as follows:

	Fatal Accidents	Nonfatal Accidents
23,017 machine loaders.....	3	182
24,974 miners.....	82	515
3,581 drivers.....	85	697
	19	176

This indicates the employment of about 13 miners and loaders for each driver, but 19 fatalities among the drivers and only 85 among miners and loaders, so there is a fatality ratio of one to five against an occupation ratio of one to thirteen.

The greatest single cause for accidents is the falling of rock and coal, but since all the men are subject to this condition and no one excepting drivers or locomotive operators are subject to injury by pit cars, it is obvious that as far as the number of men engaged are concerned there is a much larger percentage of injury due to the transportation of the coal than to the mining of the fuel and to the other operations conducted at the working face.

With the increasing use of mechanical means for hauling, the dangers increase in certain directions and diminish in others. The abolishment of the mine mule, with its proverbial kicking tendencies, reduces the number of black eyes, broken jaws and ribs. On the other hand, the handling of longer trains and, where gathering locomotives are used, the coupling of trips increase the dangers of transportation and call for special attention to couplers and bumpers.

The first aim of every operator is to increase the size of his cars so as to obtain the largest possible carrying capacity. The track gage is usually fixed by roof conditions, and this generally decides the width of a car and to some extent the length. If a short wheelbase is adopted, the car can take shorter curves, and it is more easily replaced in case of derailment; but the excessive shortness of the wheelbase may perhaps be responsible for many derailments that would be avoided if the wheelbase were of the proper length. The establishment of the correct wheel centers, therefore, is of the utmost importance, and from the safety standpoint it may be better to err on the side of making the wheelbases too long rather than too short.

The design of the car bumper has a far-reaching effect on the life of the car and the safety of the men handling it—a feature which is quite important now on account of the great increase in the weight of trains and the severe service which cars are subjected to by

*Paper read before the Mining Section of the National Safety Council at its New York meeting, Sept. 13, 1917, and entitled "Standardization of Mine Cars in Coal Mines."

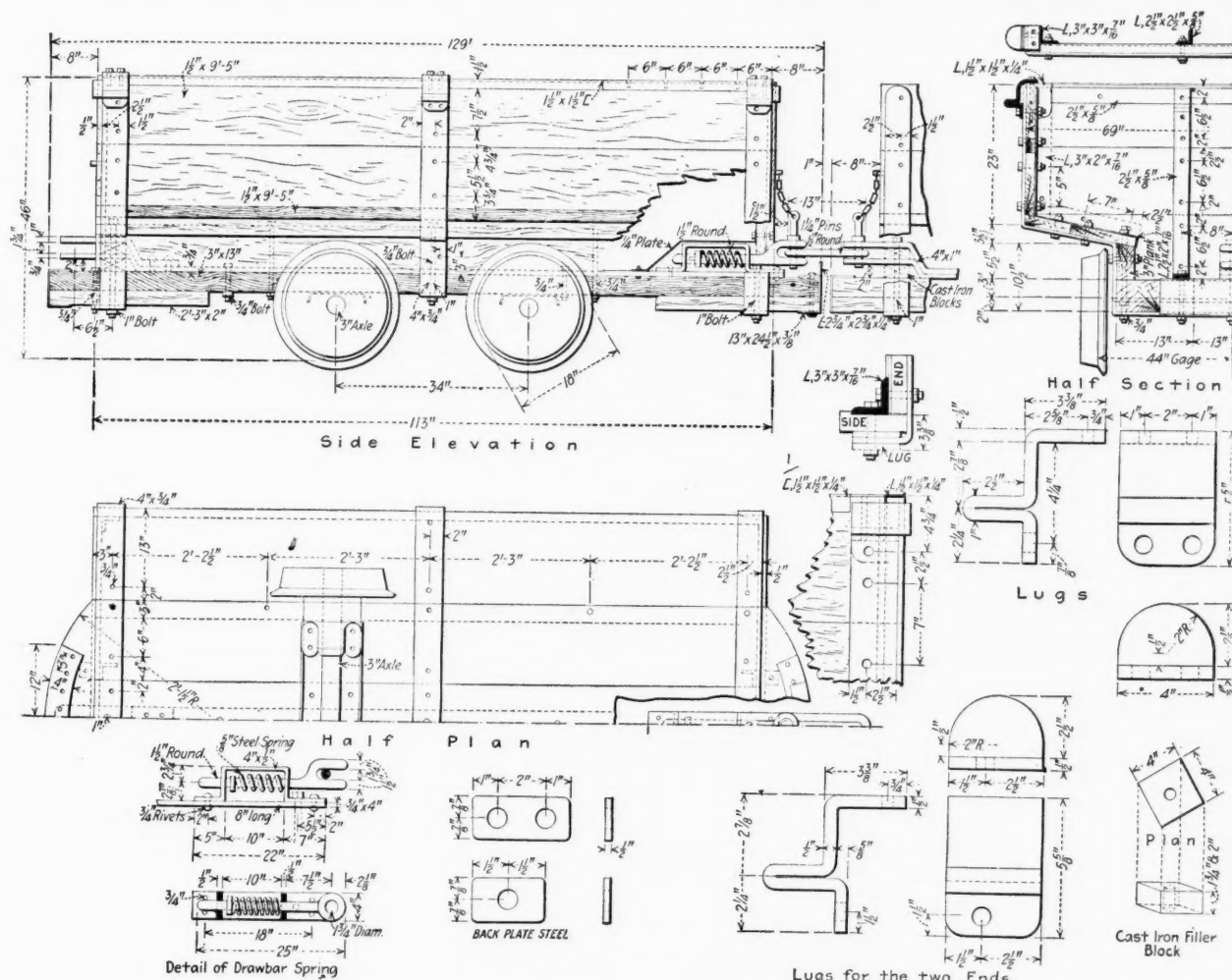
mechanical haulage. The mining laws of several of our states prescribe how far the bumper shall extend beyond the end of the car, and 7 in. should be the minimum requirement. A bumper extending the full width of the car is considered the better practice, because this provision prevents interlocking when couplings are made on curves.

By far the greater number of accidents are due to the design of couplings, and wherever possible couplings should be adopted which do not hang between the bumpers and which can be coupled when the cars are standing still, because every coupling which requires the movement of a car increases the risk.

The sketch represents a car which has a capacity of 10,000 lb. when topped 15 in. above the car body.

the gage to 44 in. in a district where 42 in. was usually considered the standard, but since this company has no other mines the question of interchangeability of equipment did not need consideration. The car has no end gate, because the coal will be dumped in a rotary tippie.

There are many advantages in this scheme of handling coal, especially in the elimination of the end gate. End gates spill much coal along the roadways. By eliminating stirrups and irons that fasten the front gate the cost of the car is reduced and projections which are dangerous to those along the roadway are removed. The bumper and couplings are designed so that it is not necessary for the coupler to subject himself to the danger of being crushed. Without his



MINE CAR DESIGNED FOR THE VALIER COAL CO., VALIER, ILL., SAID TO BE A SUBSIDIARY OF THE CHICAGO, BURLINGTON & QUINCY R.R.

It has been adopted as standard by a large mine in Illinois. The height of the car is kept to the minimum, because it seems that in practice coal can be lifted by hand shoveling no higher than over a 4-ft. car side with satisfaction. To fill this car level full requires an expenditure of 24,000 ft.-lb. of energy. If the sides of the car were 6 in. higher, this would be increased to 27,000 ft.-lb., a reduction in effort readily observed by the miners. A mine where cars are loaded easily is more attractive to the men.

In order that the height of the car may be kept down to 3 ft. 10 in., it becomes necessary to widen

guidance the coupling link will slide between the jaws of the drawhead. In order to increase the tractive power of the locomotive and to offset the advantages gained by a loose-link coupling, one drawhead is equipped with a spring. The wheelbase is nearly one-third the length of the car, and this provision should prevent many derailments.

It will be noticed that all the car irons are rounded at the ends so that they will not catch the clothes of passers-by. Particularly is this need kept in view in providing for the three supports by which these cars are held in position while in the rotary dump.

On account of the flatness of the bed in which the equipment is used, no brakes are required.

Even with the most perfect design of equipment accidents will occur which will be charged to mine cars, but for some of these they will not be responsible. Some accidents are listed as mine-car accidents which are due not to the hazards resulting from the car design but to the lack of clearance between the cars and the ribs or timbers. Wherever possible and where employees must move between cars, a minimum clearance of 24 in. should be provided. It seems far preferable to have ample clearance on one side of the track

even if there is none on the other, rather than to have too little on both sides. The definite choice of one side as the side for passing will avoid confusion.

The great rapidity with which cars must be handled calls for the selection of cool-headed men for this class of work. Undoubtedly a great number of accidents to drivers and motormen are due to that daredevil spirit which is often inspired by a desire of the men to outdo each other. They not only bring injury upon themselves, but interfere with the steady operation of a mine, and often damage and destroy much equipment in the gratification of their high spirits.

Playgrounds for Mining Communities

By H. BLAIN LACY

President, Safety First Supply Co., Pittsburgh, Pennsylvania

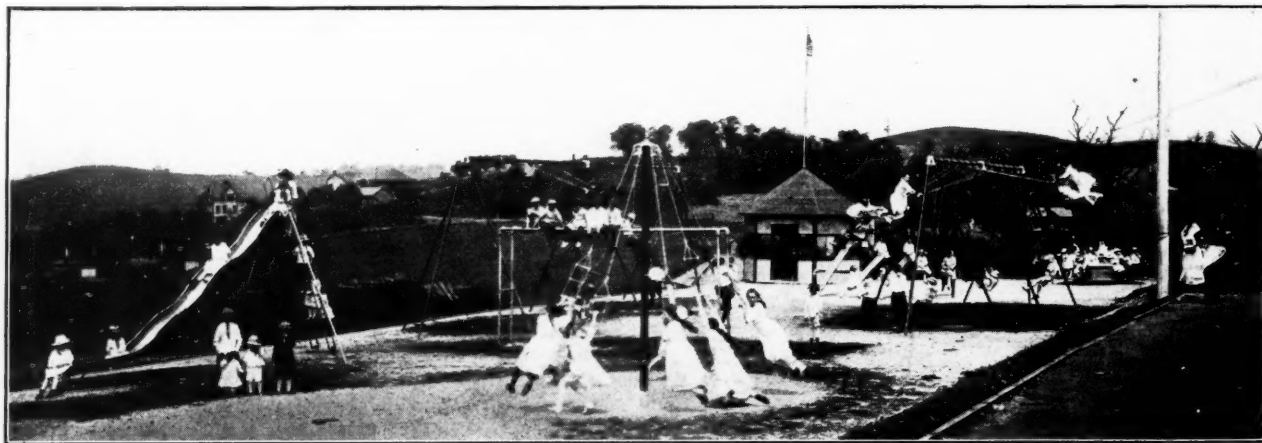
DURING the last few years, in conjunction with the large and creditable movement toward accident prevention, the progressive mine owner has found it necessary to provide for his community some means of healthy recreation. The average coal-mining town, isolated as it is from any social pleasures aside from that produced by the miners themselves, presents an opportunity for social welfare found in very few industries.

The work of the miner is confining and lonesome; he labors practically all day by himself, or with the companionship only of an assistant. He comes home

off and on moving cars, etc. This is not only dangerous to themselves but a source of hindrance and annoyance to the operation of the plant.

These conditions are not at all to be unlooked for. As stated before, the social opportunities for a miner and his family situated in a community composed of a series of houses, all practically similar in appearance, a company store and no place of recreation and amusement, is a difficult one, and one not calculated to inspire him to higher motives and cleaner habits.

A solution and an effective remedy to the conditions outlined has been hit upon by the coal operators of



AN IDEAL PLAYGROUND, WITH COASTER SLIDE, TRAVELING RINGS, HORIZONTAL LADDER, GIANT STRIDE, PLAYHOUSE, SEESAWS, SWINGS AND MERRY-GO-ROUND

from his toil at night, tired and dirty. Naturally he seeks the companionship of his fellows, and in order to provide himself with some amusement and recreation, he seeks the means easiest at hand. Unfortunately, this often takes the course of a weekly over-indulgence in intoxicants, lasting through Sunday and sometimes far into the following week with the usual results. And who can blame him for these few short hours when he can forget the monotony of his work and environment?

His family is in almost as bad straits for healthy outdoor amusement, as the surroundings of the average mining community are, to say the best, not particularly attractive. The children find their playground on the culm banks and slate piles, around the tippie, jumping

the country, by the installation of playgrounds in their communities. These serve as centers of common interest, and while the primary and original thought was that they would be of most benefit to the children, yet the results have proved that the grown-ups have found even as much pleasure in their use.

There is hardly any mining community in the midst of which there cannot, with but little trouble, be erected a fully equipped playground attractive enough to be a source of pleasure and inspiration to each individual. It is not necessary that it should be equipped with the elaborate athletic apparatus found in the larger municipal playgrounds. The primary object is that they should be equipped with those items which will create and give the greatest pleasure to the greatest number.

It is essential that the playground should be located as centrally in the community as possible, that it may be reached without difficulty and that the children may be within easy call of their parents at any time.

Frequently the statement is made that there is no suitable location available; but it is a rare instance, that by the aid of a slight fill or grade, an admirable playground cannot be made. It is not always possible to adopt the ideal arrangement. Most excellent results have been obtained by the distribution of the apparatus according to the lay of the ground. In one instance, at a large colliery, the apparatus has been placed along a narrow strip and in the center has been erected a summer house. This has permitted a division of the apparatus suitable for the younger and older children and has proved a most beneficial arrangement.

An ideal layout is noted in Fig. 2. This illustration shows the various pieces of apparatus grouped

The most satisfactory joint yet produced for playground apparatus is that found in the Diamond all-steel playground apparatus, which consists of the pipe being held securely in the fittings by means of compression dogs. These dogs are drawn tight by means of bolts which fit close into the fitting, eliminating entirely the protruding setscrew, the boring of holes and the cutting of threads on the ends of the pipe. It is easily seen that by the use of this device the apparatus may be erected and dismantled with little trouble.

Every playground will produce more efficient results if under the charge of an instructor at least a few hours every day. The school teacher of the community is perhaps the best instructor for a summer playground, but good results have been obtained by detailing some young woman or man of the community for this work. Where a number of mines are grouped within a reasonable distance, it is a most admirable and feasible plan

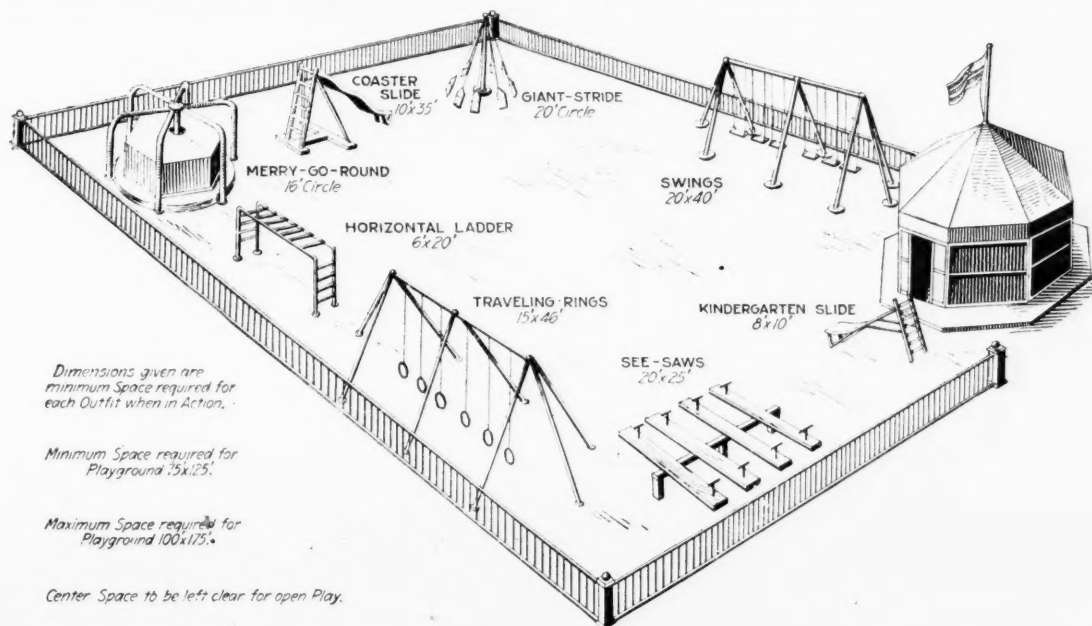


FIG. 2. LAYOUT FOR A PLAYGROUND, WITH DIMENSIONS GIVEN FOR SPACING APPARATUS

around a common center, which is left vacant so that it may be used for running games, drills, exhibitions, etc. In the summer house, which is placed at one corner of the playground, is a sand pile and around the wall is a bench. This is one of the most popular and essential items for a playground and is home-made. It is the experience that the mothers of the community will bring their small children to this summer house, where they can play in the sand, while the mothers at the same time keep their eyes on the older children playing on the various apparatus.

An essential requisite for playground apparatus is that it should be so constructed that there is no danger of its working loose from the severe vibration to which it is subjected. There are a number of devices on the market to insure this rigidity, such as securing the pipe in the fittings by means of setscrews, or by bolts being inserted through the pipe and the fittings, but these have their disadvantages in that the protruding setscrew is in itself anything but a safe proposition and that the bolt holes through the pipe and the fittings weaken the joint and therefore do not result in a connection that proves satisfactory in service.

to procure the services of an experienced playground instructor to spend a few hours each day at each of the playgrounds in turn. The supervised playground means that the children will be directed in their play and taught beneficial games which can be continued during the fall and winter months after the supervisor has been removed. In other words, it means that the children will be taught how to play, for the rough-and-ready antics of the average mining-town child is far from being healthy or natural play. As one superintendent of a large coal mine stated, "The playground has justified its installation many times over in the saving of broken glass around my community." While this is perhaps an extreme statement, yet it indicates the efficiency and practicability of its installation.

Within the last year the movement toward the installation of these playgrounds by mining communities has had great impetus and the consensus of opinion among the operators has been that it has had a most beneficial effect upon holding together their organization. In fact, one large operator stated that three men came to him stating they were going to move to a neighboring colliery because he had no playground

How a Western Coal-Mining Village Manages a Social Club

By FRANK HUSKINSON

Chief Electrician, Victor-American Fuel Co., Delagua, Colorado

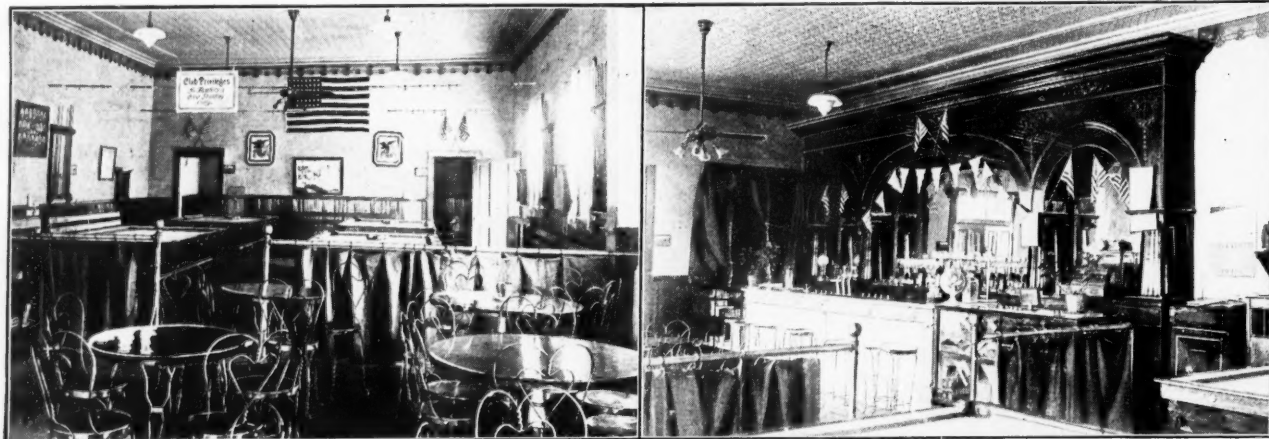
SYNOPSIS—*The article describes the work of the Delagua Social Club at the Victor-American Fuel Co.'s Delagua village and shows what can be done to promote the welfare, social intercourse and amusement of the employees and their families where there is hearty coöperation between employers and employees.*

THE village of Delagua, Colo., is one of the largest and finest "mining camps" in the state. To add to its attractions the Delagua Social Club was organized and put in active operation Sept. 9, 1916. The buildings, which were formerly a saloon and a dance hall, have been converted into a well-organized social center. They are well located in the center of the village.

The main building is of brick and contains three large rooms, the main room having three first-class

With such complete electric arrangements it is to be expected that the lighting system would accord, and it is indeed quite adequate. There are six 200-watt nitrogen lamps with large opal bowls beneath. An indirect lighting system eliminates shadows and the harsh glare of untempered electric lighting. Two ceiling fans keep the air well ventilated. On each fan is a cluster of four colored lights. The rooms in both buildings are steam heated, and the front of the main building is supplied with a large semi-inclosed porch electric lighted and fitted with chairs and tables.

At the rear are two reading rooms of fair size, large round tables in the center and plenty of chairs, armchairs and rockers. The walls are well decorated with pictures and the windows are bedecked with neat scrim curtains, the reading rooms presenting an inviting cozy and homelike appearance. These reading rooms receive four different daily newspapers in the English language and many newspapers printed in foreign tongues. *Coal Age* and popular weekly and



VIEWS OF THE BILLIARD ROOM AND "ICE-CREAM PARLOR," DELAGUA, COLORADO

pool tables and one billiard table, with benches ranged along the walls for spectators. The pool and billiard tables are separated from the soda fountain and "parlor" by an iron railing fitted with curtains. The parlor has six large round tables and a showcase well stocked with choice candies and confections. Another case contains cigars, cigarettes and tobaccos.

Delagua's soda fountain does not lag behind those in the cities. All the latest and most popular soft drinks and sundaes are served from the fountain, and for the compounding of these there is all the necessary equipment—an electric heater for water and an electric mixer. Even better yet, there is a handy arrangement for conveying the dishes from the fountain to the basement and back again, so that they can be thoroughly washed under favorable conditions and set up clean and ready for use. The club also has a large electric stove that is used for the preparing of coffee, when lunches are served to large crowds at dances and other special events.

monthly magazines are always on file, the list including *Current Opinion*, *Review of Reviews*, *Popular Science*, *Popular Mechanics*, *Illustrated World*, *American Magazine*, *Judge*, *Saturday Evening Post* and several others. The reading rooms are very popular and well patronized.

The smaller building has two bowling alleys with a raised platform at the back with seats for spectators. The game of bowling is quite popular, and as a result several good teams are found in the club. The alleys take about half the room, the other half being used for social games, in which no gambling of any kind is allowed. The space occupied by the playing tables is cleared on special occasions and used as a dance floor or for banquets. The club has a fine grafonola and an extensive collection of records.

The club is owned and controlled by the members. Any man working at Delagua can become a member on payment of \$2 initiation fee and 50c. per month in dues. In organizing, every man at the plant was invited to join, so that there were about 300 members

secured at \$2 a piece. This was the start, and the rest of the money was secured by a loan. In the one year that the club has been in operation it has paid off all indebtedness and has a surplus of over \$1500.

On the opening night, Sept. 9, 1916, the club gave its opening dance at the Longfellow School building, with lunch and refreshments. The profits from this dance as well as from several well attended dances in the last year has all been used for the benefit of the club. Some of the most popular and successful affairs in the county have been held at Delagua under the auspices of the Delagua Social Club. Among them were a Halloween ball, a grand masquerade carnival and a St. Patrick's dance. On Sept. 8, 1917, the club gave its first anniversary dance.

THE dances at Delagua are well attended by the young folks from all over the county. It has always been the custom to have only the very best of music, and the hall is always in fine condition and well decorated to suit the occasion. Prizes and souvenirs also are distributed and add to the general interest. The dances are held in the hall on the second story of the Longfellow School building, which is only about 100 yd. away from the club. The hall is used also for the Delagua welfare motion picture shows. It has a fair-sized stage and a large dressing room on each side. A curtain for the moving pictures and a fancy curtain for the drop, footlights, border lights and a piano form the other equipment of the stage. At the back of the stage there is a large switchboard to control all the lighting circuits throughout the building. The moving picture booth is of up-to-date fireproof construction and furnished with a Powers cameragraph and stereopticon. There are two regular shows every week, Tuesday and Friday nights. The best 5-reel pictures are shown, the price of admission being 10c. On other nights there are special shows such as lectures, vaudeville, special pictures and home talent.

This hall is electric lighted and steam heated. First aid and safety first are demonstrated on the stage and in the hall by competent instructors, and by the use of slides and a good lecturer much progress is made toward the welfare of the mine worker.

On Sept. 1, 1917, the Delagua Social Club, finding that it had paid for all its equipment and as said had a surplus of over \$1500, decided to give reductions in rates. Members can now buy a \$1 coupon book at a 20 per cent. discount, the coupons being good for anything that is sold in the club, as well as in payment for games, etc. Only members are allowed to use the reading rooms, pool and billiard tables and bowling alleys. The charge for playing pool or billiards is only 20c. per hour for a table accommodating two players. Bowlers are assessed at three games for 25c. Club members at dances secure their tickets and are afforded all other favors at one-half the regular price.

THE club has decided to install in the near future bocho alleys for the benefit of the Slavish and Italian members, a swimming pool, and in fact all of the good clean amusements that the city can offer. The membership of the club at the present time is about 250. Quite a number of our real "live wires" are now serving their country in the Army and Navy. The club has

a special bulletin board on which is posted all letters and pictures that are received from the boys that are doing "their bit" for Uncle Sam.

The wives and sweethearts of the American club members have a social gathering at the club every Thursday afternoon. The pool and billiard tables and the bowling alleys are given over for their use free of charge. Every week two of the ladies act as hostesses and furnish cakes, coffee, etc., the club furnishing ice cream and soft drinks. The floor is cleared after luncheon and the grafonola is started. Some enjoy themselves dancing while others prefer the pool tables and bowling alleys.

The club has ordered a fine new cash register that will serve almost all the purposes of a bookkeeper, and the purchase of a player-piano is also being considered. The club at the present time is clearing off a large tract of ground at one side of the building to put in a fine up-to-date double tennis court which will be lighted electrically for night playing.

A club band has been organized and has secured its instruments and is already practicing. An orchestra has also been formed, and a baseball team will be one of the features next spring. Delagua has an able helmet crew and first-aid team. The latter fully expects to win the first prize in the first-aid contests this fall. Delagua has also a Boy Scout troop under the



DELAGUA, COLO., HAS A FINE PUBLIC SCHOOL

efficient and able management of Scout Master Charles Bohn, who deserves much praise and credit for the enthusiasm and morale he has instilled in the boys. The Boy Scout movement has done much to spread Americanism and increase friendly relations among the foreign element. It has the hearty coöperation of the parents and the mine officials. The boys adhere strictly to the scout laws.

Mr. Snodgrass, who was superintendent at Delagua at the time the Delagua Social Club was organized, has now been promoted to the general superintendency of all the Victor-American Fuel Co.'s mines. He deserves great praise for his work, time and financial aid in putting the club on a paying basis. He was elected and still serves as president of the club.

Experience has proved that it is wise to keep at least a dozen blueprints of the mine map always handy for emergency use in case of a serious accident at any colliery. If a disaster occurs, at least two prints should be tacked up near the mine entrance for the use of all.

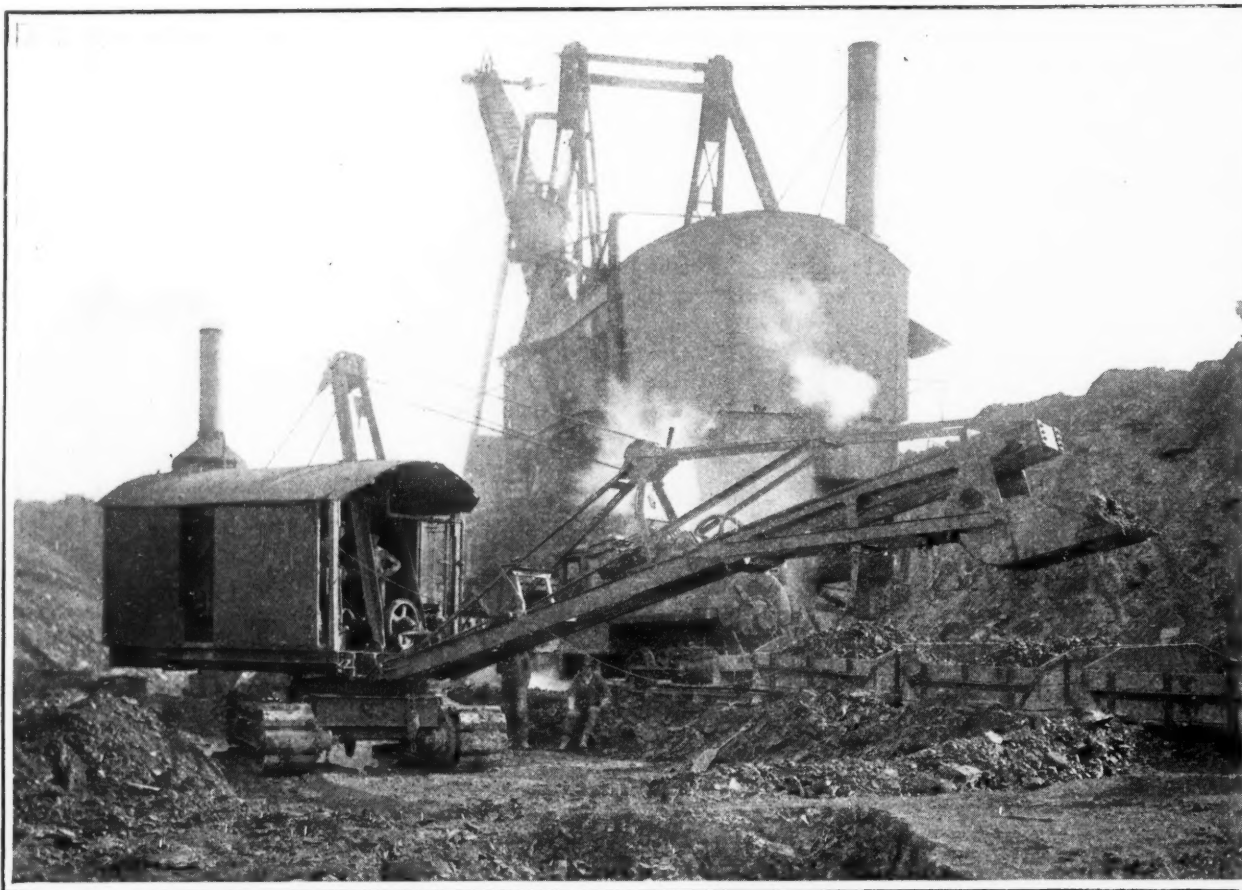


FIG. 1. BUCYRUS NO. 27-D COAL-LOADING STEAM SHOVEL AT STRIP-PIT OF SHERWOOD-LESTER COAL CO., LIBERAL, BARTON COUNTY, MISSOURI; BUCYRUS STRIPPING SHOVEL IN REAR

Strip-Pit Mining of Bituminous Coal*—III

By H. H. STOEK

Dean of Mining, University of Illinois, Urbana, Ill.

EVEN under severe conditions a steam shovel should be so built as to be able to work almost continuously, and with minimum breakdowns, as any shovel delay usually means a delay along the entire line of operation. The principle points to be considered in comparing shovels are: Pounds of pull at the dipper, ease of movement, height of the lift, cost of repairs, distance at which material can be deposited, cost of operation, capacity of bucket, cost of repairs and weight of shovel, investment cost.

The largest shovels used in stripping for bituminous coal are either of the Marion model Nos. 271 and 300, or the Bucyrus Nos. 150-B, 175-B and 225-B. Figs. 1 and 2 show the latest of each of the largest types. These are described in great detail in the excellent catalogs of the two companies noted and only a few distinguishing points need here be given.

They are designed to strip overburden from approximately horizontal beds of coal and other deposits, and hence a great reach is provided, so that the spoil need not be hauled away in cars, but can be deposited either upon the original ground or in the excavation from

which the coal has been removed. As the entire superstructure revolves the shovel can work back and forth along the face by simply shifting the track. The shovel need not be turned.

The booms vary in length from 60 to 90 ft.¹ and the capacities of the dippers vary from 2½ to 8 yd. For a given model, the larger the dipper the shorter the boom is made in order that overturning may be avoided.

In order to keep the platform horizontal when the shovel is moved, the Marion shovel is supported upon a compensating hydraulic device patented by Mr. Holmes, of Danville, and with the Bucyrus shovel the same end is accomplished by a three-point support with screw jacks. The Bucyrus shovels have a split dipper handle which straddles the boom (Fig. 11), but the Marion has the dipper handle solid and working between the two parts of the boom. The later types of shovel have an unusually heavy built-up steel boom.

The shovels are either operated by steam or electricity and the makers rate the capacity of the larger sizes as from 1500 to 5000 cu.yd. per 9 hours. The larger shovels remove an overburden up to 45 and

*Third installment of a paper presented at St. Louis, Mo., Oct. 8, during the summer meeting of the American Institute of Mining Engineers.

¹The Marion 8-yd. dipper shovel has an 80-ft. boom, and the Marion 6-yd. dipper shovel has a 90-ft. boom. The No. 150-B Bucyrus shovel has a 60-ft. boom and the No. 225-B Bucyrus shovel an 85-ft. boom.

50 ft. deep and make a cut from 40 to 110 ft. wide, depending on the depth of overburden, length of boom and length of dipper handle. The width of the cut varies inversely with the depth in order to provide a suitable space for the waste. The catalogs of the several shovel makers contain tables of relative depths and widths of cut for shovels of different dimensions.

Shovels should be able to load cars standing on a track not less than 6 ft. above the shovel track and to do this the distance from the shovel-track rail to the lowest point of the dipper door when open should be at least 14 ft. or more for advantageous working.

After material has been loosened by the steam shovel, it occupies from 25 to 50 per cent. more space than when solid, and the waste bank will take up considerably more space than the original solid bank. To provide ample space for mining the coal, the bottom of the waste bank should be kept at least 10 ft. away from the coal face.

TABLE 2. COAL RECOVERED FROM STEAM-SHOVEL PITS, 1915

State	Number of Shovels	Quantity of Coal Mined (Net Tons)	Output per Man Per Day	Output per Man Per Year	Average Value per Ton
Alabama	1	(a)			
Illinois	10	455,195	8.7	1,979	\$1.00
Indiana	22	638,220	8.3	1,474	.90
Kansas	23	780,787	5.3	1,169	1.58
Missouri	20	655,670	4.4	870	1.66
Ohio	7	273,263	7.0	1,763	.91
Oklahoma	4	28,484	4.3	274	2.08
Total bituminous (except Alabama)	87	2,831,619	6.0	1,208	\$1.29
Pennsylvania, anthracite	57	1,121,603			
Grand total (except Alabama)	144	3,953,222			

(a) Only one steam shovel was in use in Alabama, and the extent of its operations cannot be revealed.

spoil. Table 1, based mainly on lists furnished by the Bucyrus and Marion companies, shows the distribution of the steam shovels in the United States, July 1, 1917.

The statistics of steam-shovel operations are somewhat meager. A summary of those collected by the United States Geological Survey for 1915 is shown in

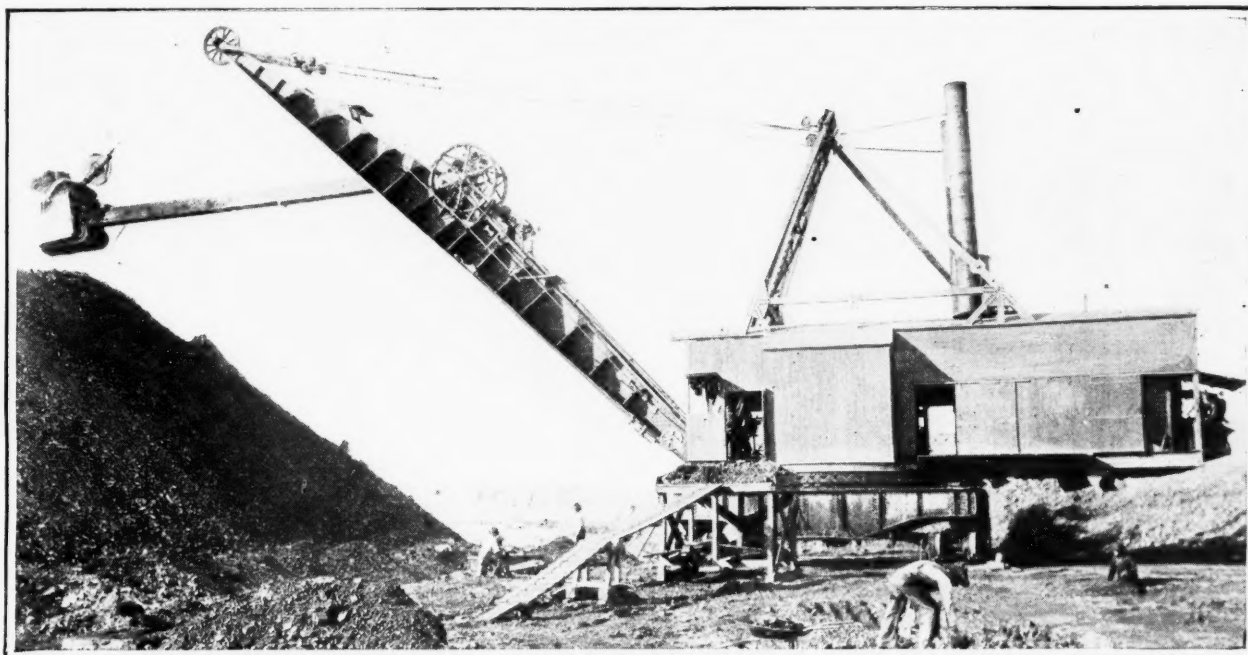


FIG. 2. MARION SHOVEL, MODEL 300. NOTE THE CHARACTERISTIC SPLIT BOOM AND SOLID DIPPER HANDLE

If part of the material removed by the shovel is harder than the rest and therefore does not run as readily after depositing, this harder material may be deposited nearest the coal face and it will thus serve as a retaining wall to hold back the more easily running

TABLE 1. BUCYRUS AND MARION STEAM SHOVELS ENGAGED IN COAL STRIPPING IN THE UNITED STATES, JULY, 1917

Make of Shovel	Boom	Handle	Dipper	Ala.	Ill.	Ind.	Kan.	Mo.	Ohio	Okla.	Total
Bucyrus 150-B	68	38	2 1/2	1	1	5	1				8
Bucyrus 175-B	75	48	3 1/2			8	1	1			10
Bucyrus 175-B	85	58	3 1/2			1					1
Bucyrus 225-B	80	58	6	1		2	3	1	5		12
Bucyrus 225-B	75	58	6			2				1	3
Bucyrus 225-B	80	58	7			1					1
Bucyrus 225-B	80	54	7			5		3			8
Marion 211	45		2 1/2			1					1
Marion 250	65		3 1/2		1	2	7	1			11
Marion 250	75		3 1/2		2	1	1	2			6
Marion 251	75		3 1/2			1	2	2			5
Marion 251	75		4					1			1
Marion 252	75		3 1/2				1				1
Marion 270	90		5		1		2				3
Marion 270	80		5		1	1		1			3
Marion 271	90		5			3	1	1			6
Marion 271*	90		6						1		1
Marion 271*	80		8				1				1
Marion 300*	80		8			2	1	2	2		7
Marion 300*	90		6						3		3
				2	5	15	40	12	17	1	92

* Electrically operated.

Table 2. Data regarding the depth of cover and yardage handled were published in the report for 1914.

Steam shovels are sometimes operated in a circular path beginning at the outside of the area and gradually working inward spirally until an area or island is left in the center. The shovel cannot be economically moved in this final stage (Fig. 3).²

This method is used mainly with the old-type fixed shovels to avoid turning but with the modern revolving shovel it is not necessary to turn the shovel. The machine first makes a "thorough cut" in a straight line across the property (Fig. 4), dumping the spoil on the surface. After reaching the boundary, it returns on a parallel cut and dumps the spoil in the excavation from which the coal has been meanwhile removed either by hand or by a smaller steam shovel.

The details of the parallel-cut method can be modified as shown by Figs. 4 to 6, and as necessitated by the shape of the property, drainage and depth of overburden.

²The illustrations for the methods of operating steam shovels are furnished by Grant Holmes, of Danville, Ill.

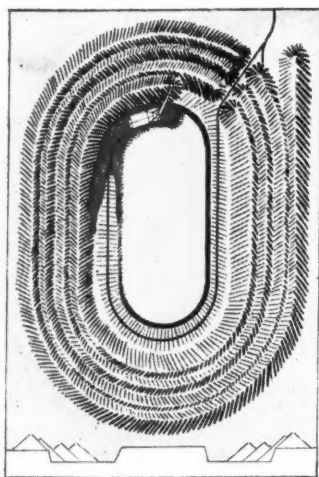


FIG. 3

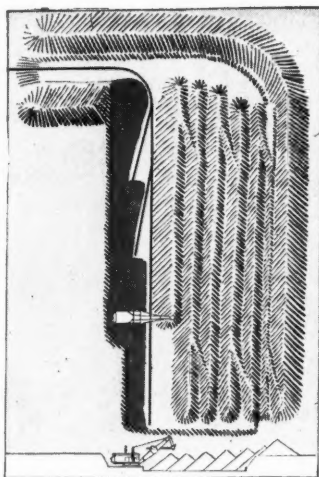


FIG. 4

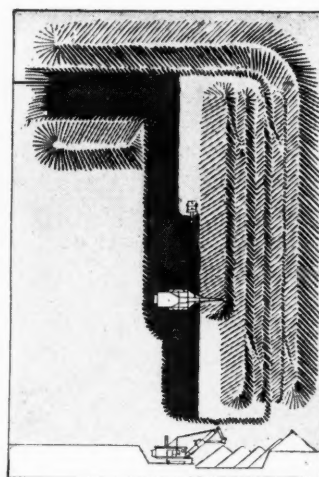


FIG. 5

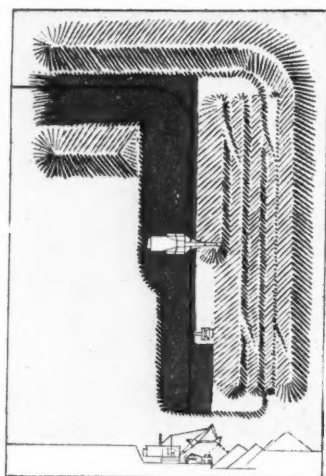


FIG. 6

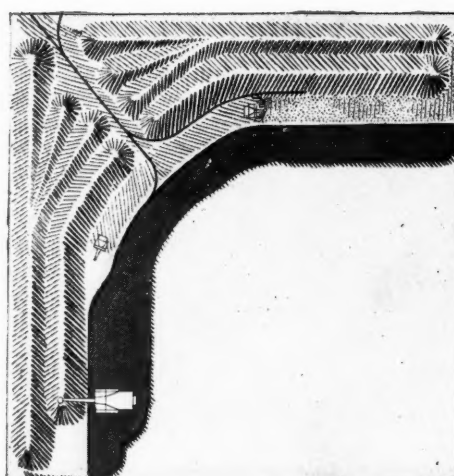


FIG. 7

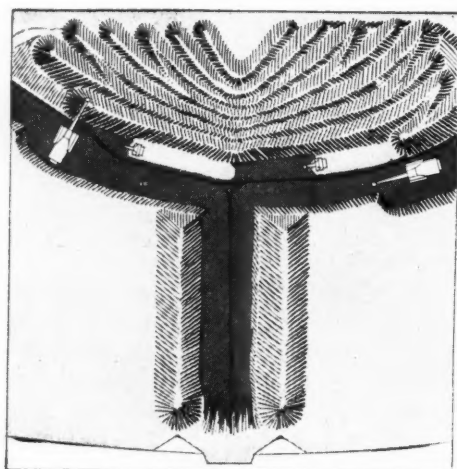


FIG. 8

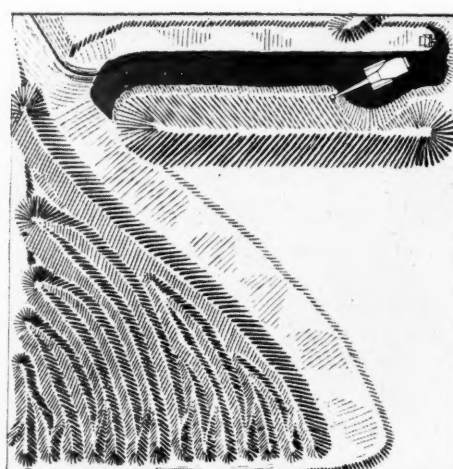


FIG. 9

FIGS. 3 TO 9. METHODS OF OPERATING STEAM SHOVELS IN STRIP-PIT MINING OF COAL

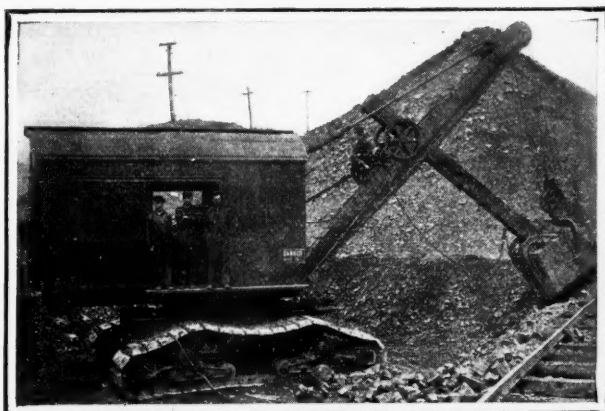


FIG. 10. MARION MODEL NO. 36 COAL-LOADING SHOVEL WITH CATERPILLAR TRACTORS

Figs. 5 and 6 show two such modifications of the ordinary parallel system. The first cut is made close to one of the property lines and extends across the property. At the far end cuts are made at right angles extending to the other property line. When the shovel reaches the far property line it reverses its direction and returns parallel to the previous cut.

The cross ridges shown in Figs. 4 to 6 are made when the shovel turns into the bank to begin the return cut. After the shovel has dug in the proper distance in beginning the cut, it digs back to uncover the triangular piece left in opening up the cut.

In Fig 5 the small loading shovel is shown following the digging shovel and there is a curve in the loading track laid on top of the coal. This curve must be continually moved forward as the loading shovel advances and is, therefore, a constant source of expense and trouble. In Fig. 6 the digging shovel follows the loading shovel; the loading track is continuous along the coal face and therefore does not require changing.

Fig. 7 shows a stripping field opened from the corner and having a diagonal haulway. The shovel starts from the upper left-hand corner and makes the first cut along one property line, depositing the spoil away from the

boundary line. It then returns to the starting corner and on its next cut dumps the spoil from this cutting and also about one-half of the waste bank from the thorough cut against the line so as to prevent the caving of the adjacent property.

Then returning again to the original starting corner, a second thorough cut is made at right angles to the first, a gap being left between the ends of the spoil bank at the starting corner to provide for future haulage. In order to avoid right-angle turns with the shovel, wedge-shaped cuts are taken off from the starting corner as indicated and soon a continuous face is formed, giving easy turns for the shovel.

With such an arrangement two small shovels can be used, both loading coal or, if there is an underlying fireclay, as sometimes occurs, the second shovel can load fireclay. If the underlying material is of value, a larger output of coal can be obtained by using two stripping shovels and two loading shovels, but in this case it would not be necessary to provide for the small wedge-shaped cuts, as neither of the shovels would have to then make a right-angle turn.

Fig. 8 shows a somewhat similar method of opening up by running the thorough cut through the center of the property and across its full width. At the far end of this thorough cut the shovel cuts in opposite directions, but by first making a number of short cuts a continuous face is produced as shown.

Fig. 9 shows another method. From one corner a thorough cut is made along one property line, the overburden being thrown inward and away from the adjoining property. When the opposite boundary is reached the shovel makes alternate short and long cuts in order that it may be kept working along a line inclined at an angle of 45 deg. to the boundary, dumping being toward the boundary line. Another thorough cut is made along the boundary at right angles to the first and a similar procedure followed, thus giving a fan-shaped area and insuring that spoil banks are left against each property line to protect it from caving into the stripped area.

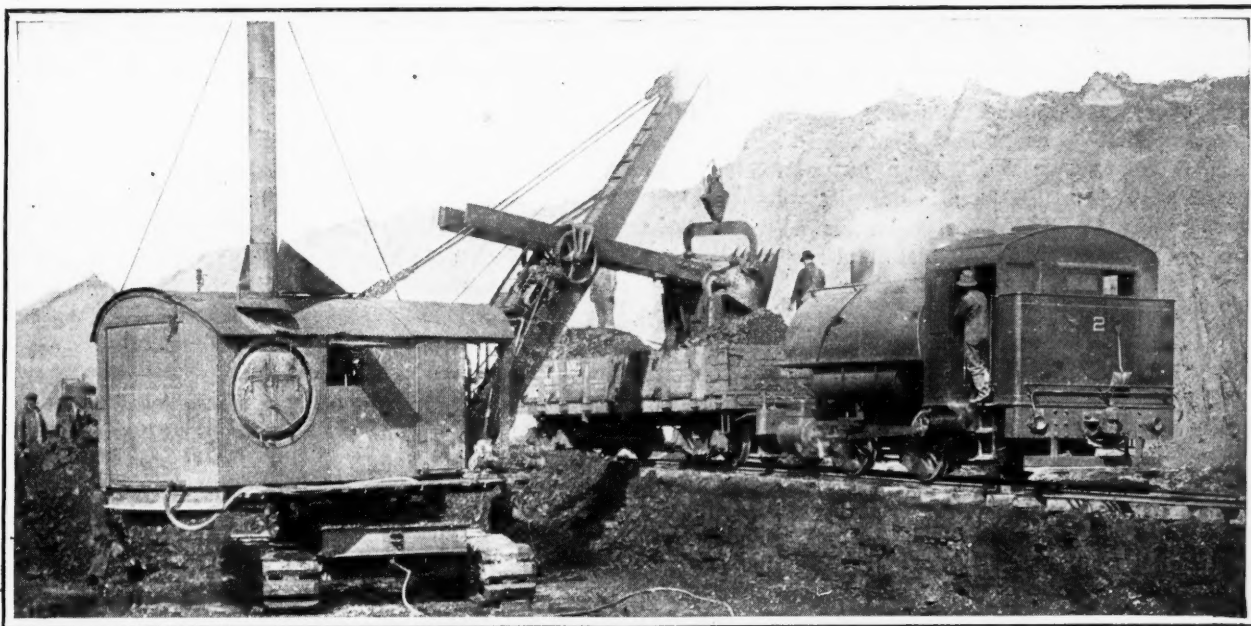


FIG. 11. BUCYRUS NO. 36-B COAL SHOVEL LOADING A TRIP OF MINE CARS—NOTE SPLIT DIPPER HANDLE



FIG. 12. BUCYRUS NO. 225-B SHOVEL UNCOVERING COAL AT CARNEY CHEROKEE COAL CO.'S STRIP-PIT

The thin layer of dirt left on the coal by the shovel is removed with hand shovels and brooms and vertical holes are then drilled in the coal by hand augers or power drills at intervals of about 6 ft. and a few feet back from the face. The Jackhammer drill with a dull drill is used in the Danville field. The Clipper Blast-Hole drill is also used for this purpose.

Wet holes are dried out by firing one-fourth of a stick of dynamite in the hole. The coal is shot by using about a quart of black powder in each hole, and in the Kansas field a keg of powder gives about 110 tons of loose coal.

At small operations the coal is still shoveled into pit cars by hand, but small revolving steam shovels are rapidly replacing hand labor for loading wherever conditions permit their use.

The loading shovels used are shown in Figs. 10 and 11. Fig. 10 shows Marion model No. 36 mounted on caterpillar traction trucks, and equipped with a special 2-yd. dipper.

The Bucyrus company has two types of loading shovels. Until recently the one mostly used was the type No. 35-B revolving shovel, equipped with a slightly longer boom and handle than the standard No. 35-B shovel so that it could load "battleship" cars. The Bucyrus company has lately put out a new machine known as the No. 27-D coal loader, designed especially for the work in the Kansas coal fields where the coal beds are seldom 3 ft. in thickness and are badly cut up by "horsebacks," which are intrusions of fireclay.

TO OPERATE under these conditions, it is necessary to have a machine with a horizontal thrust and a vertical lift, so that by means of the horizontal thrust the coal is separated near the cleavage lines and not broken up, and by the vertical lift the coal can be excavated close up to the horseback without mixing the clay with the coal. The radial action of the ordinary loading shovel is said to break the coal badly and make it difficult to separate the coal from the refuse material when the horseback is encountered. The shovel illustrated in Fig. 1 should handle 600 tons per shift of 9 hours under ordinary conditions, and with the disadvantage

by which the operator is confronted in Kansas, where 10 to 15 per cent. of the area consists of horsebacks, it should handle about 400 tons, although 700 tons per day have been handled under Kansas conditions.

The small shovels run on a track, or have a caterpillar-traction mounting that enables them to run on the bottom of the pit without track. They load the coal into gondolas (Fig. 11) or into pit cars (note the illustration at the head of this article), which are hauled away by mules or small locomotives to the tippie or to the foot of an incline leading to the tippie up which the cars are hauled by a rope.

In some of the Kansas coal there are too many horsebacks to make the use of a small steam shovel practicable, but by hand shoveling the coal is loaded into cars or boxes and these are lifted by a crane to a track on the original soil. The crane is set on the surface close to the edge of the pit and propels itself forward so as to keep up with the miners, and close to the steam shovel. In some cases cars are lifted out of the pit by a derrick which is set up on the coal. In order to avoid wear and tear on the cars, the crane handles loose car bodies, lifting the loaded bodies to their running gears on the surface. A small steam locomotive then handles the cars to the tippie where a derrick raises and dumps the coal out of the car bodies.

Strip-pits must often contend with much water. Sometimes there is an outlet to lower ground so that the pit becomes self-draining, but, in general, pumping is resorted to, electric centrifugal pumps being commonly used. In case of severe storms, the pits may become flooded to such an extent as to close the operation until the water is pumped out.

Strip-pits located in bottom lands near rivers are particularly subject to overflow at times of high water and frequently must be protected by dikes thrown up along the entire river front. When water comes into the bed by seepage and from springs, a large main tile is laid in the first cut parallel to the direction of cutting and below the coal. Openings in this carry water away from the first cut and laterals attached to these openings pass to the face of the coal under the spoil banks and so drain the lowest point in the pit. Strip-pits located

conveniently above established mines may be drained with much advantage through boreholes into the mine beneath.

C. E. Lesher in the U. S. Geological Survey Report for 1915 says: "That coal can be mined with steam shovels more cheaply than by underground methods is indicated by the fact that the average daily output per employee in the stripped-pit operations is twice as great as the average for the respective states. In other words, the labor cost is about one-half as great."

In the *Colliery Engineer* for March, 1913, Barry Sco-bee gives the cost of removing an average of 17 ft. of soil in the Kansas field as 5 to 6c. per cu.yd. of dirt removed, the overburden consisting of 6 ft. of soil, 6 ft. of shale or soapstone with thin blue shale immediately covering the coal.

The Marion company says, "Strip costs as given to us are not very reliable, but we believe that 40 to 80c. per ton of coal mined would be a fair estimate, the figure varying with the conditions."

The Bucyrus company gives the following estimates of costs for its No. 175-B Bucyrus Shovel.

ESTIMATED MONTHLY COST OF OPERATING A NO. 175-B BUCYRUS SHOVEL

1 Engineer	\$155	Oil, waste, packing	\$30
1 Craneman	100	Repairs and upkeep	200
1 Fireman	75	Share of superintendence	75
4 Pitmen	260	Incidental	150
1 Watchman	75	Interest on \$28,000	140
140 tons coal	140		
Water	50	Total	\$1,450

ESTIMATED OUTPUT OF SAME SHOVEL UNCOVERING 3-FT. COAL

Depth of Cut Feet	Width of Cut Feet	Daily Output Tons
15	85	400
18	80	334
21	80	287
24	80	250
27	75	222
30	70	199
33	60	182
35	50	171

The work of this shovel is here figured at 2000 cu.yd. per day and the estimate of coal is based on the assumption that there is a ton of coal for every square yard of area uncovered.

If the rate of stripping is taken at 40,000 cu.yd. per month, the unit cost will be 3.6c. per cubic yard.

The Bucyrus company submits also an estimate on the expense per ton of stripping the coal, loading it

EXPENSE SHEET FOR NO. 175B BUCYRUS SHOVEL

Charges	Per Month	Per Ton
Steam shovel	\$1,450	\$0.29
Blasting	250	.05
Loading	700	.14
Hauling	350	.07
Tipple and track	350	.07
Superintendent	150	.03
Repairs	300	.06
Incidental	150	.03
Interest on \$40,000	200	.04
Total	\$3,900	\$0.78

into mine cars, hauling it to the tippie, screening it and delivering it on railroad cars, with the same shovel removing 24 ft. of overburden at the rate of 2000 cu.yd. per day of 9 hours, uncovering say 250 tons of coal per day, or 5000 tons per month, the coal being 3 ft. thick.

The Bucyrus company also states the cost per month of operating a No. 225-B shovel in Kansas and gives figures for the amount of coal it will uncover with different depths of stripping with an excavating rate of 4000 cu.yd. per day or 80,000 cu.yd. per month.

The expense being as stated in the table near the head of the succeeding column, \$1800 per month, the cost of removing the overburden would be 2½c. per cubic yard.

From the same source of information is derived the

following expense sheet per ton of coal for stripping off the surface, loading the coal by hand into 2-ton tram cars, hauling it to the tippie, screening it and delivering it on railroad cars, a No. 225-B shovel removing 24 ft.

ESTIMATED MONTHLY COST OF OPERATING A NO. 225-B BUCYRUS SHOVEL

1 Engineer	\$155	Water	\$80
1 Craneman	100	Oil, waste, packing	50
1 Fireman	78	Repair and upkeep	290
4 Pitmen	270	Share of superintendence	100
1 Oiler	68	Incidental	189
1 Watchman	75	Interest on \$39,000	195
150 tons coal	150		
Total			\$1,800

ESTIMATED OUTPUT OF SAME SHOVEL UNCOVERING A 3-FT. SEAM

Depth of Cut Feet	Width of Cut Feet	Daily Output Tons
15	115	798
18	110	669
21	106	574
24	100	499
27	95	444
30	90	400
33	84	364
36	75	333
39	65	310

of overburden at the rate of 4000 cu.yd. per 9-hour day uncovering say 500 tons of coal daily, or 10,000 tons monthly, the coal being 3 ft. thick:

EXPENSE SHEET FOR NO. 225-B BUCYRUS SHOVEL

Charges	Per Month	Per Ton
Steam shovel	\$1,800	\$0.18
Blasting	500	.05
Loading	1,450	.14½
Hauling	800	.08
Tipple and track	800	.08
Superintendent	200	.02
Repairs	450	.04½
Incidental	300	.03
Interest	300	.03
Total	\$6,600	\$0.66

From the same source is gathered the following statement of cost per month of operating a 150-B shovel in a Kansas coal stripping and the estimation of the amount of coal it will uncover with different depths of overburden assuming a capacity of 1500 cu.yd. of stripping per day or a handling of 30,000 cu.yd. per month:

ESTIMATED MONTHLY COST OF OPERATING A NO. 150-B BUCYRUS SHOVEL

1 Engineer	\$155	Oil, waste, packing	\$30
1 Craneman	100	Repairs and upkeep	100
1 Fireman	75	Share of superintendence	75
3 Pitmen	190	Incidental expense	100
1 Watchman	75	Interest on \$24,000	100
70 tons coal	70		
140,000 gal. water	50	Total	\$1,120

ESTIMATED OUTPUT OF SAME SHOVEL UNCOVERING A 3-FT. SEAM

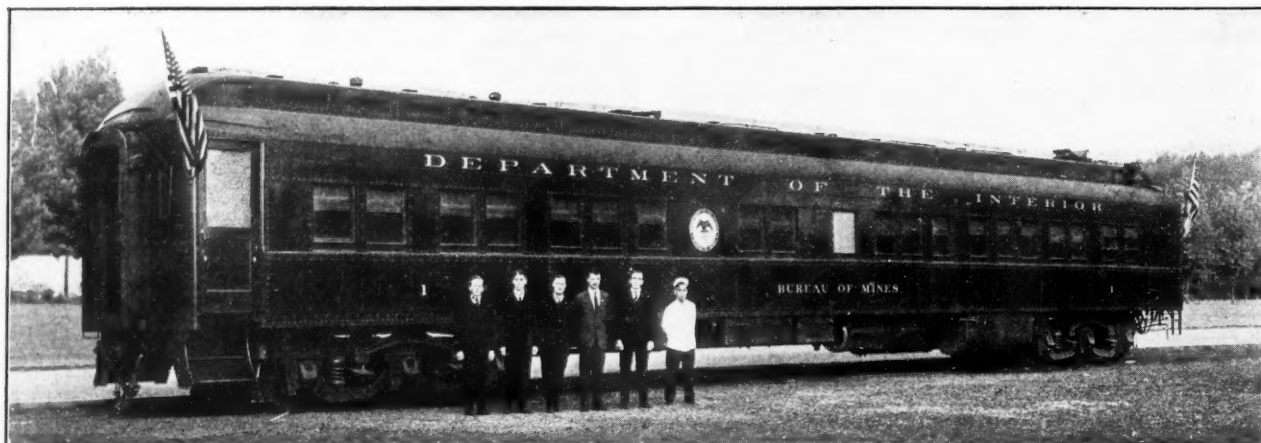
Depth of Cut Feet	Width of Cut Feet	Daily Output Tons
15	70	300
17	65	266
18	60	250
21	55	217
25	50	187
27	45	166

Estimating that the monthly excavation of overburden runs 30,000 cu.yd., and taking the expense as totaled above at \$1120, the cost of stripping is 3½c. per cubic yard.

The expense per ton for stripping, removing the coal, hauling it to the tippie, screening it and delivering it on railroad cars, using a 150-B revolving shovel, handling 21 ft. of overburden at a rate of 1500 cu.yd. per day of 9 hours and uncovering 200 tons of 3 ft. coal daily, or 4000 tons per month, is given as follows:

EXPENSE SHEET FOR NO. 150-B BUCYRUS SHOVEL

Charges	Per Month	Per Ton
Steam shovel	\$1,120	\$0.28
Blasting	200	.05
Loading	560	.14
Hauling	280	.07
Tipple and track	280	.07
Superintendent	150	.03
Repairs	160	.04½
Incidental	140	.03
Interest on \$16,000	80	.02½
Total	\$2,970	\$0.74½



The Government Mine Rescue Cars*

By D. J. PARKER

Mine Safety Engineer, United States Bureau of Mines, Washington, D. C.

MORE than one million men are employed in the United States in the production of raw material from the mines. An additional million are employed in quarries and in the various metallurgical operations necessary for the conversion of ore into a commercial product, yet we find that up to 1908 the Federal Government had paid but little, if any, attention to the lives and welfare of the huge army of toilers in this great but hazardous industry.

Many mine accidents of a serious nature had occurred prior to this time and the death rate in mines averaged 3.5 per thousand men employed, a figure considerably higher than the rate in England, Belgium, Germany and France; but it was not until December, 1907, when four most disastrous explosions occurred, which claimed together 689 lives, that the public anxiety was aroused to this appalling and unnecessary sacrifice of human life.

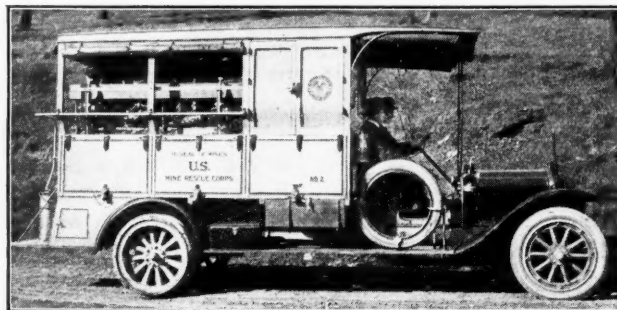
An investigation as to the causes of such dread explosions was then authorized through an appropriation by Congress in May, 1906. Among other work, investigations were authorized as to the best types of mine rescue apparatus and the methods of mine safety and mine rescue work in general. These investigations were intrusted to the Technologic Branch of the United States Geological Survey and were placed under the direction of the late Dr. Joseph A. Holmes, a man of high ideals, unswerving purpose and boundless energy, who later became the Bureau's first director. To this man the mine owner and more particularly the man underground, who faces day by day the hazards of the occupation, and the cause of safety, owe a debt they can never repay; and as a monument in his memory the Bureau of Mines will ever stand.

Through the work done in 1908 and 1909 by the Technical Branch, and the resultant awakening as to the enormous waste of life and resources, the Bureau of Mines was established by act of Congress in May, 1910. Primarily, the purpose of the Bureau of Mines, as outlined in the organic act, is twofold: (1) To

promote conditions leading to the improvement of the safety and health of the miner. (2) The efficient and economic development of our mining, metallurgical and other mineral industries.

The first purpose, involving as it does the question of the conservation of human life, received most properly the first and greatest attention. Although the disastrous explosions of 1907 brought forcibly, though sadly, before the public and Congress the need of Federal investigation and educational aid to lessen these hazards, the fact remains that the deaths from explosion causes constitute in average years not more than 15 per cent. of the total fatalities in coal mines. A study of the causes of the remaining fatalities and also, of the nonfatal accidents showed that a very large percentage of all accidents resulted either directly or indirectly from the carelessness and ignorance of the employer or employee; and as part of the general scheme to remedy these conditions the late Director Holmes conceived the idea of assigning to each of the more important of the mining sections of the country several representatives of the Bureau who would travel from mine to mine and spread the doctrines of safety. To facilitate the housing of these men and their considerable equipment he proposed the establishment of mine rescue or safety stations of both the stationary and movable types.

Seven Wagner sleeping cars of a somewhat antiquated type were secured and altered to meet the requirements of the work. Later another car of similar type was



BUREAU OF MINES RESCUE TRUCK NO. 2

*Paper read before the Mining Section of the National Safety Council, Sixth Annual Congress, held at New York City, Sept. 13, 1917, and published by permission of the Director of the Bureau of Mines.

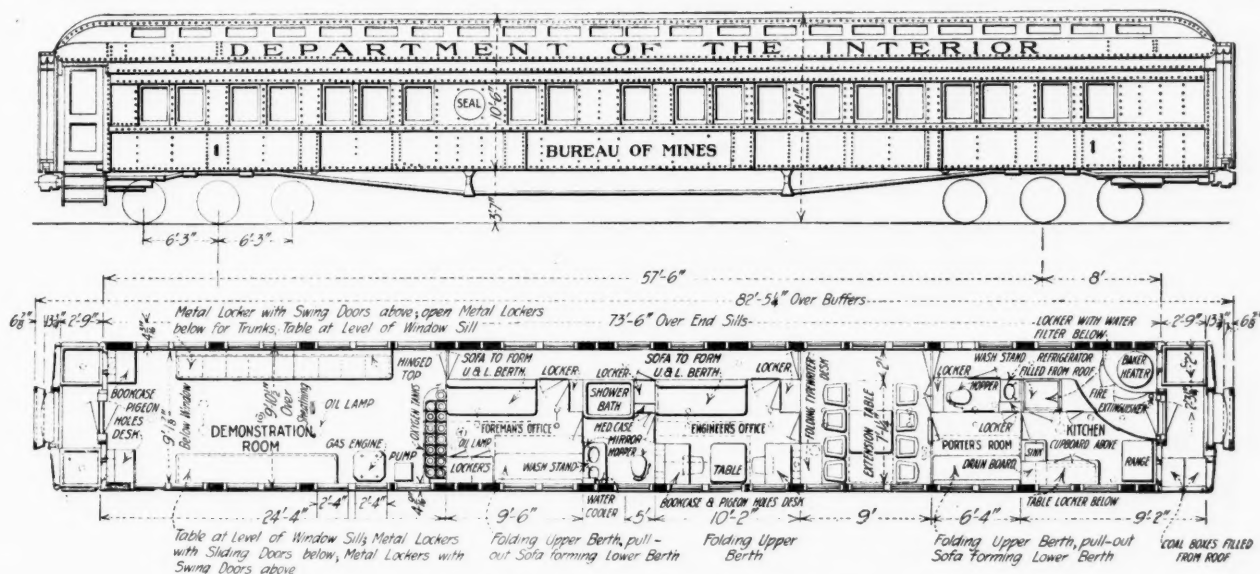
added. These were assigned with headquarters at the following cities, which are geographical or railroad centers of important mining sections: Car 1 at Wilkes-Barre, Penn.; Car 2 at Trinidad, Colo.; Car 3 at Evansville, Ind.; Car 4 at Rock Springs, Wyo.; Car 5 at Billings, Mont.; Car 6 at Pittsburgh, Penn.; Car 7 at Huntington, W. Va.; and Car 8 at Ironwood, Michigan.

The crew of each car consisted of a mining engineer, whose duty it was to investigate mine disasters and safety conditions at mines, and to advise the mine officials as to the possibilities of improving these conditions; to deliver illustrated lectures to the miners and impress upon them the need of greater care in their work not only to safeguard their own lives but also the lives of others; a foreman miner, who demonstrated and taught miners in first aid to the injured, and last, but by no means least, a cook. Either the first aid or foreman miner is usually a practical mining man, while the other is a young mining engineer.

These cars were remodeled so that one end was fitted up as a demonstration room, and here the equipment

mine, according to this prearranged itinerary, stopping for a week here and there. It might be mentioned, in passing, that the greatest praise is due the railroads of this country for their hearty coöperation in this work, both in the early days and continuing up to the present time. One hundred and ten of the more important railroad lines of the country grant the rescue cars and their attendants free passage over their lines. The appropriations for the work have been limited and the expenses have been heavy, and were it not for this assistance by the railroads it would have been necessary to seriously curtail the training.

AS a means of arousing interest and enthusiasm on the training trip, material advising of the coming of the car and inviting the miners to visit it and coöperate in the work was sent to each town possibly a week in advance of the arrival of the car. During the stay at each town a crew of miners would be trained in both first aid to the injured and in the use of the mine rescue apparatus, while the engineer would give illustrated



PLAN GIVING INTERIOR DETAILS OF THE BUREAU OF MINES RESCUE CAR

was carried, consisting of 12 sets of rescue apparatus, safety lamps, first-aid supplies, fire extinguishers, electric lamps, gas-analysis apparatus, bellopticon and the various miscellaneous supplies and repair parts needed for training and disaster work. The remainder of the car served as the living quarters for the crew and was arranged to provide a kitchen, stateroom and office for the man in charge and toilet and washroom for the crew. Two opposite sections served as a dining room and provided sleeping quarters for the first-aid and foreman miners.

Illumination was provided by oil lamps, but the cars were wired for electric lighting and this method was used wherever power was available. A Baker heater kept the quarters reasonably warm in winter. It was not quite "just like home," but if the pipes of the Baker heater didn't freeze and break, and the cook was good and plenty of miners came to take the training, the crews were quite contented.

The engineer would arrange an itinerary in his district covering a trip of possibly two or three months' duration, and the car would then travel from mine to

talks on mine safety methods as advocated by the bureau.

Training is given without cost to the miner or operator and at a time convenient to both; in fact, under special conditions in some camps classes have been held in the morning, afternoon and evening. Generally speaking, the best results have been obtained where mine rescue training has been given in the day time, as a miner, after a hard day's work in the mines, is too tired mentally and physically to absorb the lectures which are given or to properly perform the necessary practice work.

It might be of interest to speak briefly of the manner in which the men on the cars pass an average day. The crew arise at 7 a.m., and take their morning exercise, which consists of 10 min. of setting-up drill followed by a two-mile walk. From 8 to 8:30 they eat breakfast, and by this time a class of miners has usually arrived to receive the mine rescue training. By 12:30 p.m. the rescue training is completed for the day, and from 12:30 to 1:30 dinner is served. In the afternoon, from 1:30 to 4:30, a class of miners

is trained in first aid, while for the remainder of the afternoon the crew is busy putting the equipment in shape for the next day's training or for an emergency call. Supper is served from 5:30 to 6:30, and in the evening the men work on their reports, replenish the commissary and water supplies, show visitors through the car, give additional first-aid training, or talk with the miners and operators concerning first aid, rescue, safety and general mining subjects until possibly 10:30, when they turn into bed with nothing to do until the morrow.

The rescue training occupies five days of about four hours per day, and during this time the men are under oxygen from nine to ten hours. Most of the training work is done in the mines, and in atmospheres of smoke or fumes and under conditions as nearly sim-

on by a two-man crew; in fact, at times, owing to lack of funds, it was necessary to operate with only one man.

When the work was first started the Bureau had practically the only installation of mine rescue apparatus in this country, and first aid was but little known anywhere except in the anthracite fields of Pennsylvania. The field campaign, however, had been very fruitful and mine inspectors, mine owners, miners and doctors had seen the value of the work and were taking a lively interest in it. First-aid and rescue contests were held throughout the country, and "safety first" became a slogan in every mining district.

The cars had been so successful when used as bases for spreading the safety movement that it was felt that they could serve an additional great service if the crews were increased so that data could be secured



INTERIOR OF BUREAU OF MINES RESCUE CAR

ulating those at an explosion as possible. Both the foreman and first-aid miner are required to wear the rescue apparatus for a two-hour period each week in order to keep in constant training.

The first-aid training and practice cover a period of five days, with a three-hour period each day. The work is very practical, having been standardized for the Bureau of Mines by a committee of five prominent mining surgeons as a result of their years of experience in the treatment of mining accidents.

The cars continued with this personnel for about one year when, owing to lack of funds and to the urgent need for engineers on other work, the engineers were withdrawn and up until November, 1914, only training work was attempted by the cars, and this was carried

relating to the economy and efficiency of mining methods and the health and sanitation in mining towns. So, in November, 1914, after mature consideration, a mining engineer, a surgeon and a clerk were added to the crew of one of the cars. This fully manned car was operated in one of the large coal-producing states for approximately two years and very satisfactory results were obtained; so much so, that three of our cars are similarly manned at present and the others will be as soon as funds are available.

By 1915 all of the cars were in a bad state of repair and three of them were condemned. All cars were of wood, and in order to comply with Interstate Commerce Commission requirements it was necessary that steel underframes be applied to the remaining five. To

replace the condemned cars Congress provided money for the purchase of three modern all-steel cars, which were delivered early in this year. These cars were the first to be designed and built in accordance with the Bureau's own plans and specifications. Living quarters on these cars are much more comfortable than on the old ones, and each car is provided with an electric lighting system. Three additional cars will be completed this fiscal year and probably three the following year, making a total of 14 cars. All of the new cars will carry a full crew of six men.

It is intended that the new cars shall remain in training service for possibly ten months of the year, only departing from its fixed itinerary in case of a call to a mine explosion or other disaster. Ordinarily the operators and mine officials and the state inspection force are provided with the cars' itineraries, so that in case of trouble they will not be delayed in securing the services of the car and its crew.

In some districts where the mining is concentrated or where the railroad facilities are poor, it has been found advisable to provide motor trucks to carry the equipment for training and disaster work. These are located at Pittsburgh, Penn., Birmingham, Ala., and Seattle, Wash. The cars are headquartered at present at the following points: Car 1 at Reno, Nev.; Car 2 at Raton, N. M.; Car 3 at Evansville, Ind.; Car 4 at Pittsburg, Kan.; Car 5 at Butte, Mont.; Car 6 at Pittsburgh, Penn.; Car 7 at Ironwood, Mich.; Car 8 at Huntington, West Virginia.

I might speak briefly of the organization of the work. All of the cars and stations come under the supervision of the mine safety engineer, who is headquartered at Pittsburgh, Penn. The first-aid and rescue men report through the car engineer to him. The car engineers report to him on all matters pertaining to first-aid and rescue work and are subject to his orders in time of disaster.

In closing, I might mention a few of the results obtained. Approximately 35,000 miners have received the complete course in first aid to the injured, and 15,000 have received the complete training in the use of the mine rescue apparatus. In addition, many other thousands have received partial training. An average of 35,000 persons per year attend the various lectures given by the instructors.

Bureau men have given service with rescue apparatus or made investigations at over 450 disasters, and the value of the apparatus on these occasions, as exemplified by their work, has been shown by the fact that in the State of Pennsylvania alone over 100 operators have purchased rescue equipment. Miners have been trained in first aid in every section, and the value of the work done by these men is evidenced in that hundreds of mining companies now employ instructors whose main duties are to teach the rescue and first-aid work.

Many of the bureau-trained men and bureau employees have been called to this line of endeavor. Our records show that many lives have been saved by miners trained in first aid, while the severity of injuries of others has been reduced so that they have been enabled to resume work much sooner than they could otherwise. This is a conservation which it is difficult to estimate in dollars and cents.

Of late the Bureau's motion pictures have been widely used and have been of great value in showing the miner, especially the unlearned and foreign miner, the various common dangerous practice and the dangers that accompany them together with the safe and proper methods.

India's Coal

The quantity of coal produced in British India in 1916 was 16,419,082 tons, an increase of 66,602 tons. For Bengal, Bihar and Orissa 15,734,598 tons were produced. The total exports of coal fell by 17 per cent. in quantity and by 19 per cent. in value, but exports of coal to foreign countries rose by 2 per cent. in volume to practically the same figure as the average of the previous quinquennium. As much as 64 per cent. went to Ceylon, exclusive of shipments on Government account, and while Colombo obtained less from the United Kingdom, South Africa and Australia, Japan sent more and 20,574 tons were received from Mozambique.

Though considerably less than in pre-war years, the Straits Settlement demand rose by 48 per cent.; Japan, their chief source of supply, sent less and the deficiency was made up by larger supplies from India and China. Shipments from Calcutta to Siam were 5438 tons, Egypt 9250 and French Somaliland 12,487 tons. There has been a marked tendency to rail coal from the pit head to ports formerly supplied by sea from Calcutta. Indeed the quantity sent away from Bengal, Bihar and Orissa by rail and river has risen from 5,020,184 to 6,971,832 tons, of which Bombay received 36 per cent., the United Provinces 19, the Punjab 16 and Madras 8.

Bunker coal supplies dwindled by 11 per cent., owing to some extent to the control of supplies to neutral vessels. From collieries not requisitioned by the Government coal has been controlled since January, 1917, and this has been worked through a special committee. In the foreign trade the number of voyages made by steamers carrying coal rose from 132 to 143, and in the coasting trade voyages fell from 122 to 77 only. Cargo and bunker coal loaded into Government vessels and hired transports are not included. As much as 479,227 tons went away as compared with 55,521 tons in the previous year, equivalent to an increase of 763 per cent.

Supply of Air in Barricaded Place

In connection with the Bruceville, Ind., explosion, the question has been raised as to the length of time a party can live inside a barricade with the air originally inclosed therein.

In 3000 cu.ft. of space there would be 600 cu.ft. of oxygen. As the oxygen is consumed an almost equal amount of CO₂ is produced. A person could live in air containing 13 per cent. oxygen; this would allow 210 cu.ft. of oxygen to be consumed before serious trouble would be experienced. In a state of rest, if he kept cool and unexcited, a man would not consume more than 0.4 or 0.5 liter of oxygen in a minute. As there are 28.316 liters in a cubic foot there would be 5946 liters in 210 cu.ft. of oxygen, or sufficient to last one man 200 to 250 hours. At the end of this period the resultant air would contain about 6 per cent. CO₂ and breathing would be deep and laborious—*Year Book of United States Bureau of Mines.*



New Prices for Jellico District

Among the important events of the week was the fixing of a new schedule of prices for the Jellico district. In handing down the new prices, the following condition was imposed: "If, upon completion of the investigations now being made of operators' costs in the field affected, it is found that these changes are not justified, further modifications will be made at once." Coal mined in the following counties is not to be sold in excess of the prices indicated:

	Run-of-Mine	Prepared Sizes	Slack or Screenings
The Counties of McCreary, Pulaski, Rockcastle, Jackson, Lee, Wolfe, Morgan, Lawrence, Johnson, Martin, Whitley, Laurel, Clay, Owsley, Knox, Bell, Breathitt, Perry, Leslie, Harlan, Magoffin, Boyd, Carter, Pike, and all of Floyd, Knott and Letcher Counties, excepting coal produced from the thick vein Elkhorn district in these three counties, in the State of Kentucky.....	\$2.40	\$2.65	\$2.15
The Counties of Scott, Campbell, Claiborne, Anderson, and Morgan, in the State of Tennessee.....	2.40	2.65	2.15
Mines operated near St. Charles, Lee County, Virginia, by the Darby Coal Mining Co., Black Mountain Mining Co., Virginia Lee Co., Old Virginia Coal Co., United Collieries Co., Inc., and Benedict Coal Corporation, in the State of Virginia.....	2.40	2.65	2.15

Regarding Shipments of Anthracite

Two announcements were made during the week covering the movement of anthracite coal. Salient portions of these announcements follow:

Shipments of anthracite coal to New England, New York City, Philadelphia, Buffalo and Erie during the first eight months of the present year have been heavier by 2,593,817 tons than during the corresponding period last year, according to figures given out by the United States Fuel Administration.

New York received 12,666,650 tons last year and 13,912,384 this year, a gain of 1,245,734 tons. The figures for Philadelphia are 4,186,698 and 4,927,992 for 1916 and 1917 respectively, a gain of 741,294 tons. New England last year got 3,438,242 tons by rail and 2,351,995 by barge, a total of 5,790,237 tons. This year the figures are 4,195,575 by rail and 2,260,366 by barge, a total of 6,455,941 tons, showing a gain of 665,704 tons.

In only one case among the cities named is there a loss. Buffalo and Erie, taken together, got 4,346,917 tons last year and 4,288,002 this year, showing a loss of 58,915 tons. This is attributed to the cold, late spring, which permitted little or no coal to be carried over, and to the Fuel Administration's policy to ship coal past the Lake ports to the needy Northwest before the close of navigation. The deficiency will be made up later, and special emergency calls for coal, if authentic, will receive prompt consideration at Washington.

Anthracite is being shipped at present in large quantities to the Northwest, New England and other parts of the country that need it particularly. Shipments to New England during the first eight months of 1917 were 665,704 tons greater than for the corresponding period last year, according to figures furnished the Fuel Administration by the Anthracite Bureau of Information.

Aggregate shipments for the first eight months of this year were 6,455,941. Last year they were 5,790,237. Shipments from the anthracite region have been going forward to New England for the past two months in 50-car trains at the rate of two trains or more a day. J. J. Storrow, Federal Fuel Administrator at Washington, is the guiding hand in distribution within the territory under his jurisdiction.

Because of the late spring, shipments of anthracite to the Upper Lake ports to Sept. 1 were slightly less than up to the same time last year. The priority order by which a continuous flow of coal is going westward by water is expected to remedy this soon. The tardy spring reduced coal stocks in the Lake region, so that very little was carried over, which is an abnormal situation. The playing out of natural gas in Ohio and Indiana has added to the demand of the Middle West for anthracite. People there have stoves that are ill-adapted to bituminous, they say, although there is much soft coal in both states.

Production Statistics

While production of coal in 1917 will be 10 per cent. greater than was the record-breaking output of 1916, and will be 25 per cent. greater than was the production of 1915, the increase in the consumption of coal in 1917 has been greatly in excess of the increase in production. These are the conclusions of the United States Geological Survey which has just issued an exhaustive statistical statement dealing with the more important phases of the coal situation. With the exception of February, the production of coal in 1917 has been greater each month than for the corresponding months of 1916. Even in August, when there were several limiting factors interfering importantly with production, the output of coal was 42,341,809 tons, as compared with 38,238,081 tons for August of last year. These figures are exclusive of the coal made into beehive coke at the mines.

Coke production during 1917 is running slightly behind the record of 1916 for the first eight months of the year. The fixing of a \$6 price for coke, however, is expected to stimulate the production of coke during the last three months of the current year. One of the four tables which were issued with the Survey's statement shows the average production per working day by months during 1916 and during the first eight months of 1917. Another of the tables showing the cumulative monthly production shows that at the end of August, 1917, as much coal had been produced as was produced up to the end of September of the year before. The falling off in the production of beehive coke during the first eight months of 1917 amounted to 413,730 tons less than the output of the corresponding period of 1916.

A résumé is also given of the production per working day by weeks from June 2 to Sept. 22. The week ended July 14 showed the highest production, when the daily

average came close to 2,000,000 tons. Arrangements have been completed whereby the Survey's weekly reports in the future will be published one week after the period they represent. The report for the week ended Oct. 6 estimates the production of bituminous coal at 10,587,593 net tons. This is a decrease of 3.4 per cent. as compared with the production for the week ended Sept. 29. While the production still is greater than in October of last year, it is less than that which was obtained in November of 1916. If production is to continue in excess of that of the corresponding week of last year, a decided improvement must be registered within the next two weeks.

An improvement in coke production took place in the Connellsville region during the week ended Oct. 6. The mines were operated at 72.7 per cent. of full-time capacity. The principal limiting factor was shortage of labor. The country's production of beehive coke during the week ended Oct. 6 is estimated by the Geological Survey as 651,251 net tons.

National Coal Association Active

The National Coal Association is urging the Fuel Administration and the Commission on Car Service to take steps which will insure priority in the movement of coal over less important freight. While it is recognized that foodstuffs, material for munitions and certain other articles must be moved ahead of coal, it is believed that the situation is sufficiently serious to give coal the preference over all other freight except in the few cases where other products are needed more urgently. The Coal Association has a record of specific instances in which cars loaded with coal have been allowed to stand on sidings for days at a time while scores of trains passed with a considerable portion of their cars loaded with materials far less important to the country.

Another ruling which the Coal Association hopes to secure would make it mandatory that all open-top cars be distributed first to coal mines.

Fuel Administration Criticized

W. L. Bowman, an attorney of New York City, has sent a letter to Fuel Administrator Garfield in which he severely criticizes some of the actions of Dr. Garfield and tells him that he is keeping the coal trade in suspense by his failure to answer questions of interpretation. Mr. Bowman also tells Dr. Garfield that he is reported as expressing opinions contrary to the provisions of the President's proclamation. The letter follows:

The writer, who was born and brought up in the anthracite coal region, who has worked as a mining engineer in the bituminous coal region, and who has at all times been closely in touch with the coal trade, has viewed with surprise and dismay some of your actions as Fuel Administrator. I refer especially to the apparently deliberate intention on your part to keep the coal trade in suspense by refusing to answer questions of interpretation sent you, and to your reported interpretation in the case where a dealer is under contract to buy coal from a producer at a price largely in excess of that named by the President in his proclamation of Aug. 21, 1917, and where such dealer has not resold the coal by contract.

I am informed that it was your opinion which was given due publicity in a certain coal trade journal, that a jobber under contract to pay the mines a high price for bituminous coal must sell that coal at the prices fixed in the President's proclamation plus the allowed gross margin of 15c. per net

ton. To take a specific example, this was understood to mean by the trade that where a dealer in good faith and by the exercise of his best business judgment had entered into a contract with a mine to purchase a certain amount of bituminous coal for the period of a year from Apr. 1, 1917, at \$4 per net ton f.o.b. cars mines, and where his trade was of the kind which did not contract, but ordered as they required, he must sell such coal for \$2.15 per net ton, and thus take a loss of practically \$2 a ton.

I know of certain dealers who, believing in your reported opinion, did that very thing, although you know that the President's proclamation contained a statement showing the contrary to be the fact; namely: "For the buying and selling of bituminous coal a jobber shall not add to his purchase price a gross margin in excess of 15c. per ton of 2000 lb." This certainly allowed a dealer to use his purchase price and not \$2 as a basis for figuring his selling price. I am further informed that those dealers who did not follow your reported opinion and take a loss acted largely upon the personal opinions of your field men, that they could sell for cost plus 15 cents.

Upon the issuance of your orders No. 101, paragraph 11 was taken by the newspapers, coal trade journals and by the dealers and public in general to confirm your previous reported opinion in this regard. Personally I believe that paragraph is so indefinite that it does not carry out your opinion if that was the intent of that paragraph. The result of order No. 101 has been to cause untold distress and worry among the coal dealers, and when they have written to Washington for an interpretation, the usual reply is as follows:

"The inclosed publication No. 101 will undoubtedly give you the necessary information."

Even telegrams stating a specific case receive no response. What can a dealer do under such circumstances? He certainly cannot continue his business facing either a fine of \$5000 and two years' imprisonment for each transaction, or a loss of \$2 for each ton sold. Thus if every dealer understood paragraph 11 to require him to sell at such losses, and took the only safe step, he would discontinue business even although it might involve the loss of thousands of dollars in goodwill, not to mention giving up a life business and a possible sole source of family support. This you can easily recognize would mean chaos in the coal trade and untold and useless losses.

There would seem to be hardly any question that any order of the Government requiring a dealer to actually lose \$2 a ton on all coal sold to his own personal customers would be unconstitutional. Fortunately this question of constitutionality would not seem to arise, because the express congressional authority under which you act provides in section 25 as follows:

"In fixing such prices (maximum prices) for dealers, the commission (Federal Trade Commission) shall allow the cost to the dealer and shall add thereto a just and reasonable sum for his profit in the transaction."

Why do you not comply with this requirement, relieve the present distress of the coal dealers and the consequent interruption of business, by immediately making public your interpretation of paragraph 11 in conformity with that portion of section 25 which I have quoted above, and also in conformity with paragraph 2 under the title "Jobbers' Margins" of the President's proclamation dated Aug. 23, 1917?

If, on the other hand, your interpretation is in accordance with your reported opinion, then you should immediately advise the coal dealers of that fact, so that they may know where they stand, and that they will have to make their decision accordingly.

Because so many of the coal dealers are having sleepless nights over the present situation, I shall attempt to give this letter the same publicity as has been given to your opinion, in the hope that it may somewhat relieve the unfortunate situation, and in so doing I especially call attention to the fact that the punishment prescribed by the congressional act is only applicable where the prices "have been fixed as herein provided"; hence this would seem to indicate that unless you do allow the cost to the dealer and a just and reasonable sum for his profit in the transaction, any other price that you may fix can be disregarded with impunity and without any fear of punishment under the act.

Hoping that you will receive this letter in the kindly spirit in which it is written, and accord it such attention as will correct the injustice of which I complain, so that you will actually encourage the production, conserve the supply and control the distribution of fuel, as was the expressed intention of the congressional act from which you derived your power, I am, very respectfully yours,

(Signed) WILLIAM L. BOWMAN, C.E., LL.B.

Miscellaneous Washington Notes

No decision in the matter of increased prices for coal at the mines in the Central Competitive District is expected for at least a week. The operators in the four states this week will present their figures showing the increase in costs, if the new schedule of wages is put into effect. These figures will have to be digested before Dr. Garfield will announce any decision with regard to prices.

* * *

At both the Fuel Administration and the offices of the National Coal Association, predictions are that the meeting of coal operators to be held Oct. 23 in Pittsburgh will be the most important gathering of coal men that ever has taken place. There is no disguising the concern that is felt here both in and out of official circles that the coal situation is in a dangerous strait, and that operators must concentrate on greater production.

* * *

All state fuel administrators were instructed Wednesday by telegraph by Dr. Garfield that all emergency requirements of coal would be apportioned through the Washington office. The state administrators were asked not to attempt to apportion emergency orders among operators or jobbers, since distribution of coal offers fully as great a problem as production. The Fuel Administrator is casting about to find a traffic director for his staff. He expects to secure the services of a railroad traffic official who has had long experience.

* * *

In order to secure an even greater production of anthracite coal and to aid in securing its distribution, the anthracite operators, who conferred with Dr. Garfield Tuesday, will name a representative man in their industry to serve as an assistant to L. A. Snead, who is in charge of the division of fuel supplies of the Fuel Administration. To accept the position it will be necessary for the representative of the anthracite operators to sever all connection with the business for the time being. The Government's requirements of anthracite will be handled in the future by a committee of three. It was brought out at the meeting that there has been produced to date 8,000,000 tons more anthracite than had been produced at this time last year. The operators pledged their full support to the Fuel Administration in its efforts to solve the coal problem.

COMING MEETINGS

Kentucky Mining Institute will hold its winter meeting, Dec. 14 and 15, at the Seelbach Hotel, Louisville, Ky. Secretary, Charles W. Strickland, Sturgis, Kentucky.

American Association of Mechanical Engineers will hold its annual meeting Dec. 4 to 7 at the Engineering Societies Building, New York City. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Coal Mining Institute of America will hold its annual meeting, Dec. 5 and 6, at Pittsburgh, Penn. Secretary, H. D. Mason, Jr., 541 Fourth Ave., Pittsburgh, Pennsylvania.

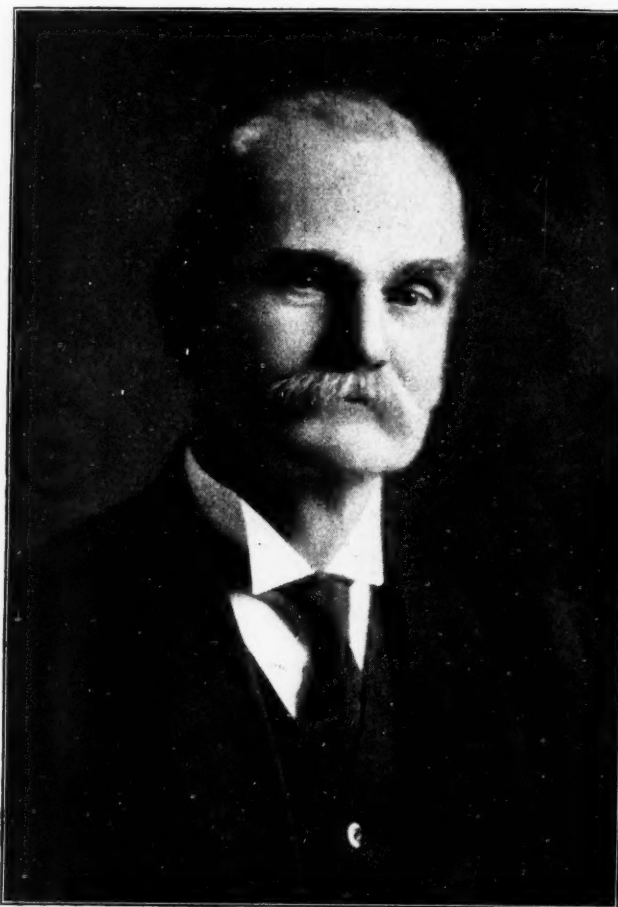
Illinois Mining Institute will hold its fall meeting Nov. 17, at Springfield, Ill. Secretary, Martin Bolt, Springfield, Illinois.

National Coal Jobbers' Association will hold its first annual convention at the Hotel Sherman, Chicago, Ill., Oct. 24-25. Treasurer, L. Romanski, Old Colony Building, Chicago, Illinois.

Alexander Bryden

Alexander Bryden, one of the veteran mining engineers in the anthracite coal fields, died at his home in Dunmore, Penn., on Sept. 26. He was aged 67 years. Surviving him are three daughters and one son.

Alexander Bryden was born in Carbondale, Lackawanna County, Pennsylvania, July 2, 1850. He lived in Jenkins township, Luzerne County, as a boy and was graduated from Lafayette College in the class of 1871 with the degree of mining engineer. He had been engaged in engineer work previously for the Pennsylvania Coal Co. In 1878 he went to Central City, Colo., as assistant superintendent of a gold mine in which



ALEXANDER BRYDEN

members of the board of directors in the Pennsylvania Coal Co. were interested. He returned a year later, but again in 1880 went west as superintendent of the Colorado Prince Gold Mining Co., at Leadville, where he remained for 2½ years.

On his return he became mine foreman for the Pennsylvania Coal Co. at Pittston, but soon went to Arizona as superintendent of the Detroit Copper Mining Co. In 1884 he returned once more and became assistant mine superintendent at Pittston for the Pennsylvania Coal Co., in 1895 being made superintendent of both Pittston and Dunmore mines, until the purchase of these interests by the Erie in 1901. He remained as mining engineer for a year when he became consulting engineer for the Pennsylvania Coal Co., the Hillside Coal Co. and the New York, Susquehanna & Western Coal Co., offices that he still retained at the time of his death.

The Labor Situation

General Labor Review

Increases of prices are heralded by economists as a means of increasing the production of the articles thus increased in value. Sometimes this applies well to labor, but at other times the opposite effect results. It is to be feared that the recent increase of wage, if consummated, will only produce strikes, unrest and diminished production.

The mine workers in northern Illinois are discontented because the tonnage prices are increased equally in all fields and not proportionately to the rates hitherto paid. They argue that in consequence the mining of northern Illinois coal becomes relatively decreasingly attractive as an occupation. The operators argue, and in this they are backed by thinking union men, that wage increases which are proportional to previous wage rates increase progressively the handicaps against the operators in the fields paying the higher wage rates and ultimately entirely close their market, laying their men idle.

Pro Rata Wage Increase Just but Burdensome

The northern Illinois miners, who have built themselves good homes and established themselves in a happy community life, will do well to remember that these homes and these social surroundings will do them no good if there is no work to be obtained. By putting up the wage scale, they will make working time slack and mines few; then local real-estate values will decline and their earnings of a lifetime will be swept away. They will do far better to listen to Frank Farrington, the president of the state union, than to Pio Franckey, who is so keenly anxious to raise their wage scale that he is willing in so doing to destroy their industry and wipe out their accumulations.

Partly as a result apparently of the increase in wages being specific instead of pro rata, and partly doubtless for the purpose of hurrying the hand of the temporizing coal dictator, H. A. Garfield, the miners in northern Illinois to the number of 10,000 to 15,000 have come out on strike and so are paralyzing the war preparations, laying other workmen idle and causing countless persons to freeze. Almost all the men along the Chicago & Alton R.R. between St. Louis and Springfield are on strike, the men at Auburn, Virdin and Girard leading the way. Thus the proposed increase in wage has merely decreased the tonnage. In Indiana also 6000 men have gone on strike.

Mine Worker Should Justify a High Wage Rate

It is likely that the increases will decrease production in other ways. More wages give the mine workers more power to conduct strikes. Less profits to the operators make them less able to meet the situation, and usually a poverty-stricken operator has more strikes than one who makes money. Larger wages per ton of product make the miners less disposed to work so hard.

Consequently the public may well find that the higher wage of the miner and other mine workers is directly opposed to the interest of the consumer. If the mine worker would work harder and buy Liberty Bonds out of his greater earnings, everyone would wish him well; but instead he too often does less, strikes more and is discontented. The patriotic mine workers, and they are many, must be heartily disgusted with these men when they recall that they are their fellow union men and compatriots.

The settlement in the nonunion fields of southeastern Kentucky and in Tennessee appears likely to be balanced by a strike in the Southwestern coal fields of Oklahoma, Missouri, Kansas and Arkansas. In these states the labor leaders are worse than the men they lead, which cannot be said of the northern regions. It is the labor leaders who are inducing the men to strike in the Southwest.

Needless to say the men who elect such rascallions to office are quite likely to follow their evil counsel. The presidents and secretaries of Districts Nos. 14, 21 and 25 met in unholy conference on Oct. 15 and decided to call a strike for Oct. 19, 35,000 men thus threatening to cease work. These evil-minded men want the penalty system abolished, a system which they have agreed upon, which applies both to operators and miners and which is perfectly just if not perfectly advisable.

Any man who goes on strike in violation of his contract is liable to a fine of 50c. a day for every day he is idle. The company is similarly liable to every man in case of a lock-out. As there are arrangements for the discussion and adjudication of difficulties, and as the rules make all such adjudications date from the time of the complaint, there is no reason to strike and therefore no reason to invite the infliction of a penalty.

Mine Worker's Word Should Be a Bond

The fine is for a deliberate violation of the pledge of the person fined. If the state and national laws were adequate, these fines and even heavier fines might be collected by law of the workingman who violated his pledge. Somehow the law in this democratic country seems to have fallen into the belief that the workingman's word is not the word of a free man and a gentleman, and consequently cannot be enforced by law, and the workingman urges that he is not an honorable person like other men and his word must not be taken too seriously.

This is not our judgment of the mine worker; it is the mine worker's judgment of himself. He strikes against paying the just fines to which he agreed, and now even goes so far as to strike in violation of his agreement for their abolishment. He wants the right, denied always to the self-respecting, to cast his word, his pledge, his promise to the wind at his pleasure. He urges thereby that he is something less than a man, and that for him the law must be considerate and pitying. We are sorry that the mine workers of Kansas, Oklahoma, Arkansas and Missouri rate themselves so painfully below the rest of humanity.

Garfield Says Wage Increase Is Fair

Dr. H. A. Garfield has written that "Strikes must not take place. If they have been ordered, the order ought to be revoked at once. The terms of the agreement agreed upon at Washington between operators and miners are fair. I understand that the only clause objected to is the clause providing for penalty. It is just that this should be agreed to. I shall use every power committed to me to prevent strikes and warn you against allowing the order to stand. If you cannot compose your at-home differences with the operators, meet me here at Washington, meanwhile keeping the mines at work."

Of course, the anthracite mine workers hope to participate in the wage increase of the bituminous men, and apparently the anthracite operators are perfectly willing, if the public will make up for the increase by paying more for the coal it buys.

Anthracite Men Naturally Want Increase Also

The anthracite mine workers want an increase of \$1.40 a day for all men except door tenders, drivers and timbermen. Boys who are now getting less than men's wages and more than \$1.90 a day are to be raised, if the demand is granted, \$1 per day. For other boys and workmen not included in the first classification, 75c. per day advance will be asked. The contract miners will ask an increase of 10c. per ton. The miners' laborers receive about one-third of the gross earnings made by each partnership of miner and laborer, and their share will not be changed.

Editorials

It's All According to the Point of View

NOW the editor of a well-known house organ blossoms forth with the suggestion that the regulation of coal prices should be from the bin backward to the mine. He says:

I suppose that under our interpretation of the law of supply and demand it is necessary for the Government to arrive at the cost of coal before it can decide upon a fair retail price. Still, a frank acknowledgment of this necessity does not prevent most of us from wishing that Uncle Sam might have started at the bin and worked back to the mine. Very few of us have mines, but most of us have bins—some of them even yet unfilled; so it is natural, and perhaps excusable, that we should be more concerned about the price of coal at the bin than at the mine. Why wouldn't it be just as fair for our Government, acting in its present paternal capacity, to determine what I can afford to pay for coal at the bin and let the other costs go hang, as to figure out a profit at the mine and let me go hang? At any rate, I can't shake off the delusion (?) that my bin is of much greater consequence to me than some one else's mine. Mayhap a few other misguided folk share this ridiculous view with me.

We also have a delusion, and in addition an important suggestion. The coal operators are large consumers of the products our editorial friend is interested in selling. Let us start this reversal of the usual order of things by applying the principle that is suggested to the particular equipment of the company that pays our friend a salary for thinking out such a subtle plan. Coal-mining people will be pleased to advise the Government just what they think they would like to pay for their machinery and other supplies. Following the fixing of this consumer's price, the authorities in Washington can then work back to the manufacturer, and we have no doubt he will accept with gratitude what is left after a few agents and middlemen have pocketed their share. The plan is so delightful to think about we should not limit its action. Let's apply it to our butcher, our grocer and our tailor; we know they would be pleased.

The Department of Mines and Minerals in Illinois

THE State of Illinois has always been progressive, and this feature is particularly noticeable in the recent reorganization of the administrative branch of the state government. Early in the present year a bill passed the state legislature and a law was enacted having for its purpose the consolidation of the numerous branches representing and controlling the coal-mining industry in Illinois.

Under the new law, there was created the Department of Mines and Minerals, which absorbed and placed under one head no less than four separate organizations; namely, the State Mining Board with its chief clerk; the Board of State Mine Inspectors; the Miners' Exam-

ing Commissioners, or Miners' Examining Board, and the Mine-Fire Fighting and Rescue Station Commission, together with the superintendents and assistant superintendents of the mine-rescue stations.

The organization of the Department of Mines and Minerals has resulted in re-creating the branch known as the State Mining Board, which is now styled "the Mining Board," and the "Miners' Examining Board," which retains its former title. The department consists of the following divisions, together with their newly appointed officers:

Department of Mines and Minerals—Evan D. John, director, Carbondale; Martin Bolt, assistant director, Springfield.

The Mining Board—Evan D. John, director; M. S. Coleman, Harrisburg; James Needham, Chicago; William Hutton, Duquoin; James Richards, Belleville.

Miners' Examining Board—William Hall, president, Springfield; William H. Turner, treasurer, Collinsville; John A. Tuttle, secretary, Harrisburg; Joseph C. Viano, Coal City.

Division of Mine Inspection—There are 12 inspection districts in the State of Illinois, each district being in charge of a state mine inspector, who is appointed by the governor for a term of two years, beginning July 1. The present state mine inspectors are the following: Walter A. Waite, Spring Valley; William E. Kidd, Peoria; Thomas P. Back, Canton; Robert Reavley, Riverton; Joseph Haskins, Catlin; Thomas A. Lewis, Litchfield; Robert Pettigrew, Collinsville; Thomas C. Wright, Belleville; Joseph C. Thompson, Murphysboro; Frank Rosbottom, Benton; George Bagwell, Eldorado; Henry T. Bannister, Herrin.

Division of Economic Investigation—James Taylor, Peoria, investigator. The purpose of this division is to investigate the methods and conditions of mining coal in the State of Illinois, with special reference to the safety of human lives and property and the conservation of coal deposits.

Division of Mine Rescue and First Aid—There are, at present, six mine-rescue stations in the state, in charge of the following superintendents: Alexander Skelton, Harrisburg; Thomas Rogers, LaSalle; Thomas English, Springfield; James Robertson, Duquoin; James Towal, Benton; James Weir, Herrin.

As thus organized, the Department of Mines and Minerals is called upon to administer a number of laws more or less scattered throughout the statutes of the state. The department has just published a pamphlet of 93 pages containing the several laws under which the department must operate. These laws have been compiled and indexed for reference by Edward J. Brundage, attorney general, Springfield. The pamphlet contains numerous annotations and references of interest that serve to elucidate the text of the law. Copies of this pamphlet can be obtained by writing the Department of Mines and Minerals, Springfield.

Fatalities Due to Explosives

IF THERE is anyone who opposes the use of permissible explosives in coal mines, he has only to review the recent data on explosives issued by the Bureau of Mines, to be convinced that his judgment is in error.

Fourteen years ago, when 9.8 per cent. of the fatalities at bituminous mines were due to the use of explosives, the total quantity of permissible explosives used in these mines was less than 250,000 lb. annually. Today less than 3 per cent. of the fatalities are due to the misuse of explosives, and the consumption of the so-called safety explosives in bituminous mines has reached the enormous total of nearly 22,000,000 lb. annually. These are figures that need no argument to support the message they convey.

A Foreign Language Newspaper

WE ARE glad to call attention to a foreign language newspaper published in the Hungarian language, one that circulates among the miners and is conducting a safety-first campaign. It is the *Hungarian Workmen's Journal*, or *Magyar Munkaslapp*.

Much has been said about the suppression of organs not written in English, but the services of the Government should be directed solely to the restraining of disloyal utterances. There should be no attempt by the suppression of newspapers in foreign languages to prevent men from learning what they need to know about this country and the proper conduct of their work. We are all too apt to look to official and company efforts for the promotion of safety civic virtue and patriotism.

After all, the best work that can be done will be performed by the workmen themselves and not by agencies beyond their control. There is much hope that papers in foreign languages will do the work that is being less effectively performed by corporations and bureaus in bulletins posted and distributed. To those who are trying to promote the welfare of the workingman, coöperation with such newspapers is suggested.

Food Conservation in the Home

ALARGE part of the \$700,000,000 food waste in this country is good food which is allowed to get into garbage pails and kitchen sinks. Don't throw out any left-overs that can be reheated or combined with other food to make palatable and nourishing dishes.

Every bit of uneaten cereal can be used to thicken soups, stews and gravies. Stale bread can be used as a basis for many attractive meat dishes, hot-breads and deserts. Every drop of sour milk can be used, and all particles of meat and fish can be combined with cereals and vegetables in making fish cakes, meat pies, etc. The careless paring of potatoes and fruits often results in a waste of 20 per cent. of the food material. The outside leaves of lettuce and the tops of many vegetables make desirable cooked "greens," or even salads.

The present is a time when every mining man who is the head of a family should make it his business to know what food and how much food his family actually needs to be efficient. The U. S. Department of Agriculture, Washington, D. C., will send valuable bulletins to anyone requesting them, telling about the nature and uses of foods and how to feed a family economically.

War Conditions Necessitate Improved Industrial Methods

THE great nations of the world now realize that old ideas and easy-going uneconomical systems of industrial operation must no longer prevail. The world war has changed our perspective. We must conserve material, capital and labor, and this cannot be done effectively unless we understand all the relationships these important factors bear one to the other.

This is an age of committees and commissions, most of them created for the purpose of collecting data to help solve the serious problems of the war. Out of all this whirlwind of words some good may come, and the progress of nations be controlled and directed through the organization of so much knowledge.

The coal-mining business, like all other great industries, must now come in for its share of scientific investigation. There are those who undoubtedly believe that in an industry which deals with the production of a single product, which product is later sold in the state in which it exists in nature, research can accomplish but little. Nevertheless great opportunities here exist. For example, it was such scientific investigation that brought about the manufacture of artificial dyes from coal tar, which discovery has resulted in the building of a great industry. It is quite likely that continued research will some day result in legislation that will make it unlawful to sell coal as coal, and require that this great natural product shall be disposed of only in the form of the resulting products after distillation. Just a little consideration of the small proportion of useful value now received from each ton of coal mined will cause one to view the preceding statement with less credulity.

Almost at every turn we encounter fuel waste. Take, for instance, the investigations in steel manufacture that led to the development of the Gayley dry blast. This method now permits the air supply of the modern blast furnace to be delivered in a dry condition. A furnace uses 40,000 cu.ft. of air per minute, and it is a simple matter to calculate that before the Gayley system was introduced it was necessary to evaporate 164,500 gal. of water in the firing of each furnace every month. The Gayley dry-blast method reduced this evaporation to 20,000 gal. and saves for the country and the steel industry 10 per cent. on fuel, in addition to affording a 10 per cent. increase in output.

The coal industry has ever so many problems of a similar nature. Few of these problems but can be solved by proper research. If the war does nothing more for the coal industry than to subject it to the careful investigation of competent and practical scientists, there will be some benefits to at least partially offset the present losses resulting from the war.

DR. GARFIELD'S published remarks to the operators are bold words as coming from a man who has side-stepped his plain duty, has temporized with the public and shown a complete lack of *morale*. He had an opportunity from the first to say whether he opposed wage increases, and whether he would permit price advances. He deliberately made a noncommittal speech. If a general similarly neglected his plain duty, he would be courtmartialled for cowardice.



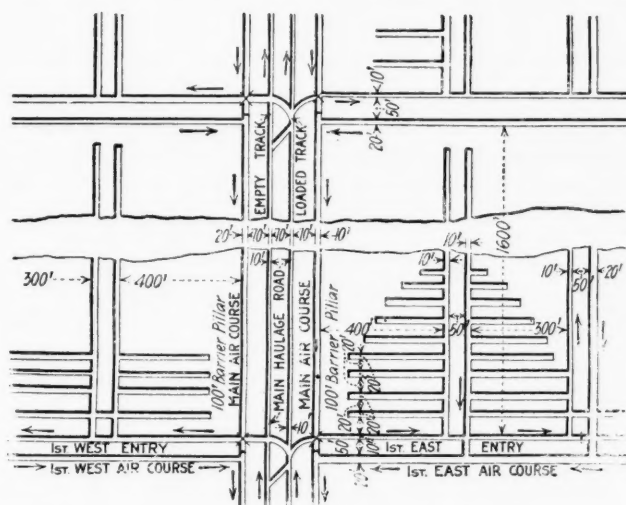
HIGH LIGHTS OF THE COAL SITUATION AS SEEN BY THE "COAL AGE" CARTOONIST

Discussion by Readers

Working Pittsburgh No. 8 Coal

Letter No. 1—Referring to the request for suggestions as to the best method of working the seam of coal described by E. O. Carney, *Coal Age*, Sept. 22, p. 509, allow me to submit the following outline of a plan I would adopt in working such a seam, assuming that the available funds and conditions underground permit.

As shown in the accompanying figure, I would drive four entries abreast in the center of the field, which would permit the same amount of development on each side of the mine and afford a more uniform output of coal, by equalizing the length of haul on the cross-entries. As indicated in the figure, I would drive all entries 10 ft. wide and make the air courses generally 20



PROPOSED PLAN OF MINE

ft. wide, conditions permitting, so as to reduce the expense of yardage in driving the air-courses.

Of the main entries, the two center ones would be used as haulage roads, one being for loads and the other for empties, while the air-courses on either side of these would furnish either the intake or the return for their respective sides of the mine. If the mine is generating gas, the haulage roads should be made the intake entries, while the air-courses will then be the return for each respective side of the mine.

I would make the main-entry pillars 70 ft. wide and the cross-entry and butt-entry pillars 50 ft. wide. The cross-entries should be driven about 1700 ft. apart, which will allow 40 rooms to be driven off the butts, which are 300 ft. apart. The rooms should be driven on 40-ft. centers and widened to 20 ft., leaving 20-ft. pillars between them. In driving rooms 300 ft. deep, I assume that the cars are pulled from the face of the room to the entry by a motor or mule. The purpose of driving the rooms so deep is to reduce the cost of entry driving; but this, of course, will depend much on the conditions in the seam.

In working the rooms, as well as in driving the entries, I would leave the drawslate up, if possible, for the reason that a soapstone roof is generally treacherous. The soapstone, in this district, has frequent "pots" which drop out without warning, and leaving the drawslate up will give added support to these dangerous places, providing the slate is of a hard nature.

Conditions permitting, I would drive the rooms 20 ft. wide up to the limit, and draw back the 20-ft. pillars by driving crosscuts through them of the same width, if it was possible to use machines for cutting the coal. These crosscuts should be separated by stumps 10 or 15 ft. wide, depending on the character of the coal.

When a crosscut has been driven through the pillar the stump between it and the gob can be worked out with the pick, should it be unsafe to use the machines. The same process can be repeated until the entire pillar is drawn back, leaving only the entry stumps, which will be drawn when pulling back the entry pillars. As each pair of cross-entries is drawn back and abandoned, the switches and rails are pulled and used in other parts of the mine.

MINE FOREMAN.

Ohio, Penn.

Letter No. 2—Although I have never worked in the Pittsburgh No. 8 seam referred to in the inquiry of E. O. Carney, *Coal Age*, Sept. 22, p. 509, I believe that the conditions there do not differ greatly from those that I have experienced in other mines where I have worked.

From Mr. Carney's statements, I assume that he has a uniform seam, 5 ft. in thickness, lying at a depth of 100 ft. below the surface of the valleys, which is increased to 500 ft. under the hills. I understand that this seam is overlaid with drawslate varying from 10 to 14 in. in thickness, and has a floor of shale that has been found to give much trouble in a neighboring mine, by heaving badly. He states, also, that the greatest difficulty is experienced in the summer months, in that mine, caused by the swelling of the roof and the breaking of the timbers.

These conditions are not dissimilar to those in other localities and must be met by adopting a suitable method of working that will provide greater pillar support and prevent the occurrence of a squeeze or creep, which is the cause of the bottom heaving. As has been suggested, this trouble is chiefly due to the pillars being too small for the pressure they must support.

Under these conditions, I would open the mine on the double-entry system, making the intake airway the haulage road. The entries should be driven on 50-ft. centers and have a width of 10 ft., making the entry pillars 40 ft. wide. The rooms should be driven on 40-ft. centers and opened 24 ft. wide, which makes the room pillars 16 ft. in width.

If it is possible to install an electric plant at this mine, I would use shortwall Sullivan machines for cutting the coal, assuming that the mine is not generat-

ing gas. The use of these machines would probably make it unnecessary to do much shooting, as the coal can probably be wedged down when properly mined. This plan would eliminate the danger of solid shooting, which always disturbs the roof and causes heavy breaks and falls. It frequently happens that the roof rock breaks high enough to admit surface water, which would give much trouble in the mine.

Particular attention must be given to the timbering of each working place when driving up the rooms and drawing back the pillars. If proper care is taken to maintain a uniform thickness of pillar and width of opening, I believe that, with the adoption of a proper method of working such as I have suggested, there would be little trouble in working this coal successfully.

Worley, Ky.

OSCAR JONES.

Qualified Mine Foremen

Letter No. 3—One has only to turn his thoughts back to the time previous to the enactment of the certification law in Pennsylvania, in 1885, to realize how different was the work then required of the mine foreman from what are now the duties of that official.

In the early days of coal mining in Pennsylvania, the mine foreman was little more than a tracklayer. He was a "jack-of-all-trades" and, although skilled and careful in the execution of his work, he was not the man required to take charge of the extended mine operations of the present day. In the development of the mining industry and the increased demand for coal, many difficulties from gas and water have been encountered in the mines. The ventilation and drainage of mines, today, requires a knowledge of the theory and principles that the early mine foreman did not possess. The use of compressed air and electricity, in the mechanical equipment of coal mines, and the introduction of coal cutters, haulage motors and other machinery, require men who understand their use and construction.

UNEXPLAINABLE MINING ENACTMENT

These conditions have brought, from time to time, changes in the mining law, first in 1893 and again in 1911. But, speaking of mining enactments, the most difficult one to understand and comprehend the causes that led to its adoption is the act of the Pennsylvania legislature, approved June 1, 1915, which provided for the employment of uncertified men to act as mine foremen in the bituminous mines of Pennsylvania. This law has caused much discussion and given rise to a great difference of opinion in regard to its usefulness in promoting safety in mines. As has already been remarked, the tendency of this law is to undo the work that has been accomplished in coal mining during the past 30 years.

In closing, let me give briefly the qualifications that I consider essential to make an efficient mine foreman. They are as follows: A thorough understanding of the mining law, the different systems of mining coal and ventilating and draining mines, together with a knowledge of first-aid work and the ability to give first aid in case of need. The mine foreman must be strong-minded, endowed with good reason, a knowledge of human nature, temperate habits, good executive ability and tact in dealing with men. A foreman should not

be less than 30 years of age and have had at least 15 years' experience in underground work. He should understand mining in all its branches in order to take efficient charge of the work.

R. W. LIGHTBURN.

West Leisenring, Penn.

Unit vs. Departmental Control

Letter No. 2—The question was raised in the Foreword, in the issue of *Coal Age*, Sept. 15, as to which method of control was the better, in the conduct of mining operations—the unit plan where the responsibility was vested in a single head or department; or the department plan where the operations were classified and each department had its own head who was responsible for the work done in his branch.

This is a matter of great importance to operators who wish to get the best results. In common with others, I have always been on the lookout for improved methods of mining and have studied closely different schemes of mine management. My conclusion is that the best results are obtained by the selection of one man to act as manager of all the inside and outside work connected with coal mining.

PERSONAL SUPERVISION MARKS THE ABLE FOREMAN

The duty of the manager would be to select an able man to look after each class of work, and then follow up each of these men to see that they perform their several duties satisfactorily. In order to do this, the manager must have a wide experience and knowledge of all classes of work in and around the mine.

An able and efficient manager will spend most of his time at the plant, instead of sitting in a city office 300 miles away from the scene of operations. By keeping in close touch with each department and observing the progress of the work performed, he will be able to offer suggestions and discuss proposed improvements in methods and equipment, with his department heads, in a manner that will insure the greatest economy of operation.

The unit system of control through a single manager will have the effect of unifying and standardizing all operations and harmonizing the work of the several departments. But, where each department is operated independently of the others, there is not only much duplication in the work performed, but it will frequently happen that one department will cut down its operating expenses to the detriment of another department, which must result in a net loss to the company.

AN INEFFICIENT SUPERINTENDENT

I recall an instance where the superintendent had charge of all outside labor but spent most of his time in the office. The mine foreman had no authority outside of the mine and was helpless to avoid the delay that was caused when his motorman was obliged to wait at the tippie for a trip of cars that should have been dumped and ready for the return trip when the motorman came out of the mine.

In this particular case, the manager got around to the mine about once a year, which gave him no opportunity to observe the lack of harmony that existed between the inside and outside operations. A falling off of the daily output was blamed, by the superintendent,

to the failure of the inside foreman to get out the coal, when the real trouble was due to the lack of co-operation between these two departments at the mine.

The claim of the inside foreman that he was handicapped by a shortage of labor, if analyzed by the management, might show that the shortage was due chiefly to bad management on the part of the mine foreman. Miners do not care to work long in a mine where they are compelled to wait for cars, or where other conditions are such as to prevent them from loading a full turn and earning the money that they could make in another mine where the work was better systematized. Every mine thus draws to itself a class of miners whose capabilities correspond to the advantages that the mine offers for work.

CAUSES OF LACK OF HARMONY

Lack of harmony between officials in charge of different classes of work, appears, at times, when the mine electrician fails to give proper attention to the bonding of the rails and similar duties that seriously impede the haulage of coal in the mines; or, the same results may be due to inadequate supervision of the tracks and switches, whereby derailment of cars and motors is not infrequent.

These failures, on the part of the electrician or the mine foreman, emanate from a desire to reduce operating expenses in their particular line of work. The result is that the mine gradually gains a bad reputation among miners who are capable of making a good daily tonnage where the conditions are favorable.

In closing, permit me to say that the success of the unit system of control depends on the general capability and wide experience of the man at the head. It frequently happens that a company manifests a disposition to select a mining engineer to take charge of the general operations in and around the mines, believing that his ability adapts him to this general supervision.

CHOOSING A MANAGER OR SUPERINTENDENT

Not to underrate the ability of a capable mining engineer, it is my belief still that the man who is best adapted to the general supervision of mining work is one that has risen from trapping, driving, running motors and having charge of underground operations, to the position of mine superintendent and general manager.

In my opinion, the man for the office of general manager is not one who "knows it all," but a man that is willing to listen to the suggestions of his men—it may be the humble remark of one who is generally regarded as the "dumbest man" on the plant. The manager who invites suggestions and gives them the consideration they deserve, regardless of their source, is the man who will succeed in drawing about him a contented bunch of men, who will work under him for the interests of the company and bring the largest results.

Ohio, Penn.

W. R. JONES.

Letter No. 3—The Foreword of *Coal Age*, Sept. 15, which raises the question of unit versus departmental control in respect to the effective development and supervision of extensive mining operations, is worthy of the most careful consideration in regard to its application to the work both outside and inside the mine.

Many mines are so extensive in their development that it is a practical impossibility for one foreman to personally supervise and properly safeguard the work in different sections of the mine.

In my opinion, the mine foreman must be held responsible for the success of the entire underground operations; and, to accomplish this effectually, the mine should be divided into sections of such size that a competent assistant foreman can thoroughly supervise the work in each section. Each assistant foreman must be held responsible to the mine foreman, for the work performed in his section.

This plan will also have the advantage of concentrating the work and insuring a more strict compliance with the mining law and mine regulations. The assistant foreman can then personally direct and oversee the work of miners in his section, and this should prove to be the most effective way of preventing accidents and provide a more economical extraction of the coal under the ever-changing conditions.

EFFECTIVE PLAN TO OVERCOME DIFFICULTIES

In order to better overcome the difficulties brought about by the war, in respect to the shortage of labor and the restlessness of miners, to say nothing of a larger proportion of inefficient labor, it is necessary that the mine foreman shall devise a plan whereby each individual worker can be given prompt personal attention and thus more fully and wisely utilize the capability of each man employed in the mine. This will result in developing the greatest possible efficiency and increase the daily tonnage per capita.

It would seem that the most effective plan for accomplishing this purpose is to appoint a leader for each undertaking in the mine. For example, locomotive runners should have full charge and supervision of their brakemen; coal cutters should likewise be in charge and oversee the work of scrapers or shovelers. An electrician should be made responsible for all electric installations and work. A machine boss should likewise be made responsible for all mechanical equipment and have charge of all men in attendance on such work, as pumpmen, ropemen, etc. Drillers and trackmen should oversee their helpers.

In this manner, one man is made responsible for the performance of every task in the mine, and this should create a stronger feeling of responsibility and develop an initiative in these men that would be of great assistance in case of an emergency, when it so often happens that nothing is done because the men have to wait for orders. Every detail of work would be more effectively accomplished.

G. E. DAUGHERTY.

South Brownsville, Penn.

The Negro, North and South

Letter No. 9—It has not been my lot to have had a long experience with the negro in the South, though I have known him well in the North. From what has been written in regard to his supposed characteristics, one would be led to think that a negro is just as black as he looks; but this has not been my experience in dealing with him.

It was my good fortune to have had charge of a mine, some time ago, where a number of negroes

were employed. I had been told, before going to the mine, that I would have lots of trouble with the "niggers." I often look back, now, with pride and pleasure to that time, and am prone to regard with satisfaction the work accomplished. In my dealings with the negro element I tried to treat them with the same civility and respect that I showed the white men, and I can say that this treatment was returned a hundredfold.

I cannot say that I observed anything that could be considered as characteristic of the negro, in the manner in which they performed their work. I found them very obliging and obedient to orders. They always showed a willingness to settle any difficulty that arose, and their work was as well performed as that of the whites.

In the union meetings the negroes frequently took a leading part. Indeed, the vice president of the local was as black a negro as you could find. Also, one of the pit committee was a negro. Although some of them were very friendly, I never had any desire to ascertain from them what was done in their meetings. I trusted them fully and my confidence was not misplaced.

Referring to the question of "caste" mentioned in a previous letter, is it not true that we are guilty of the same practice that we condemn in others? We try to avoid being seen in conversation with the foreign-speaking workman outside of working hours, and the same is true with respect to the negro; and yet, many of these men have made good progress since coming to this country. Especially is this true of the negro, who it must be remembered was captured as a wild horse and brought here against his will.

We pride ourselves on our Christian civilization and democracy; but, let me ask, how much of this doctrine are we preaching in our daily contact with the foreign element and the negro working in our mines? I realize there are many who will disagree with me on this subject, but it is my opinion that if the negro is treated in the same manner as the white man, his color will not be reflected in his acts.

THOMAS HOGARTH.

Heilwood, Penn.

Convict Labor in Mines

Letter No. 1—Referring to the letter of H. S. R., *Coal Age*, Aug. 25, p. 340, let me say that the State of Kansas has, for about 40 years, operated a mine in connection with the state penitentiary at Lansing. The coal lies in a 22-in. bed, but the thickness is somewhat variable. The depth of the shaft is 720 ft. The mine is operated on the longwall system, and each laborer works about 35 ft. of the face.

Convict labor is employed and each man is required to produce a certain amount of coal per week, which varies from one-half to one-third of that produced by free laborers in neighboring mines, under approximately the same conditions. Most of the convicts are, of course, at first entirely inexperienced in mine work, and these are placed with experienced miners, for a time, for instruction. The conditions are such that any able-bodied man can easily accomplish the required amount of work, and none but able-bodied men are sent to the mine. The work in the mine is neither harder nor more dangerous than that which would be required of men on the sur-

face. At one time coal from the state mine was sold on the open market; but this met with opposition and for several years, the coal from this mine has been supplied only to state institutions.

Whether convicts should be employed in mine work is a question that has arisen so seldom in this country that it has received little public attention. Various governments have, in the past, used convict labor for the production of minerals and some still continue to do so, but the purpose had no reference to the welfare of the prisoners; the only object sought was profit to the state. The attitude of the public in respect to the treatment of prisoners has since, however, undergone much change, and in this country at the present time the welfare of the prisoner is considered before the profit to the state.

It is a well established fact that men must be employed in some useful undertaking; and this is as true of prisoners as of any other class of men, irrespective of the need or desirability of the products of their labor. If a prison is to accomplish anything in the way of fitting its inmates to be returned to society, they must be employed in a useful purpose.

Unfortunately, the work has not always been chosen with regard to its effect upon the prisoner and, because he was forced to labor at what did not interest him and for which he received no compensation, a liking for work has not been cultivated. It should be possible, by allowing prisoners compensation for their labor, to educate them to do useful and remunerative work when they leave the prison.

DIFFICULTIES IN EMPLOYING CONVICT LABOR

Most prisoners are not trained, nor are they highly intelligent, and their work must be largely of the cruder kind. It should not, however, be mere mechanical labor, such as operating certain kinds of machinery or doing work that tends to become a habit, entailing nothing but mechanical motion without thought, since such tasks deaden the worker instead of stimulating him.

If there is opportunity for outdoor work, it is probably better for the men; but there is nothing, in mining itself, that is harmful. There is a disadvantage in putting men, and especially men of the lower types, together in seclusion. This is very apparent to any one familiar with conditions in prisons.

If it is granted that a state has the right to use the labor of those unfit to be at large in society, as compensation for the expense incurred in caring for them, then it would seem that they should be used in a way that will bring the most compensation to the state, provided that no harm is done to the prisoners.

Whether the products of prison labor should be allowed to compete in the market with the products of free labor is an economic question that I will not attempt to discuss; but if convict labor can be used in mining to the advantage of the state, there is no more reason why it should not be used in this way than in any other way.

The output per man, in a prison mine, will be much less than it is in free mines, because of the lack of incentive to efficient work and because many of the men will not be skilled workers. This difficulty can be overcome in part by setting a task that will not absorb

all the energies of the laborer and, moreover, allowing him compensation for the production of more than a required minimum.

I believe that the employment of prisoners by the state is much better than the letting out of their labor; for when they are hired out to private employers, there is every temptation to the exploitation of their labor, and the prisoners are not likely to be helped. In other words, they are likely to be made worse rather than be reformed. Such conditions also give rise to numerous opportunities for charges of corruption.

On the whole, it can probably be said that the operation of a state mine by convict labor, in Kansas, has been successful and that the prisoners have received more benefit than harm from their labor. Whether a similar proceeding would be successful in other states depends largely upon conditions. Probably outdoor labor is better for the prisoners, but guarding large numbers of men is more difficult and expensive in the open than it is underground.

One advantage of mine work to the prisoner is that he learns how to do work at which he can probably find employment after he is discharged from the prison.

C. M. YOUNG,
Urbana, Ill. Asst. Prof. Mining Research.

Practice of Safety First

Letter No. 2—I was pleased to read the letter written by a West Virginia engineer, on the practice of safety first, *Coal Age*, Sept. 1, p. 383, but think that he makes a little mistake in assuming that many large coal companies, after adopting safety rules for the operation of their mines, care little whether such rules are obeyed. In my opinion, the trouble lies more with the men and the under mine officials.

In all coal-producing states the peoples' representatives have enacted laws governing the operation of mines so as to properly safeguard both lives and property. In most of these states the coal-mining laws require the examination of state mine inspectors, deputy inspectors, mine superintendents, company mine examiners, mine foremen, assistant foremen, firebosses, shotfirers and miners. The laws are sufficient for safety, but the men in direct charge of the work often fail to enforce them, which makes these officials responsible for unsafe conditions and possible accidents.

FAULT IS NOT THAT OF THE COAL COMPANIES

When we reflect that coal companies invest large sums of money in coal lands, and buy material and employ men to open and operate extensive mines, it stands to reason that it is to their own interest to employ competent men who will see that all operations are conducted in compliance with the laws and regulations for safety, so that accidents will be avoided and their properties safeguarded.

On the other hand, it is the men in charge of the operations who are too often prone to disregard safety rules in order to expedite the work and make a bigger showing in the daily output of the mine. The same is true of the miner who is willing to assume many risks so that he may load as much coal as possible. It is these men who are the guilty ones and do not practice what they preach.

For example, the coal digger, when out of the mine, makes his proud boast of being a great worker and able to make big wages. He claims that his years of experience have made him a practical miner who would not, under any circumstances, expose himself to danger by working under bad roof or neglecting to set timber to make his place safe. But we find this man, in the mine, when instructed by the foreman to set a post, replying that he will do so as soon as he has loaded his car. Many a mine foreman has been called back, after giving such instructions, to find this "experienced miner" under the fallen rock. He had failed to practice what he preached in regard to safety.

MANY MINE FOREMEN FAIL TO PRACTICE WHAT THEY PREACH

The mine foreman (and I am one myself and I fear likewise guilty), in taking the examination for a certificate, has informed the Board of Examiners what he understood his duties in the mine to be, and having proved by his answers to their questions that he is capable of managing a mine, the board has granted him a certificate. How often do we, acting as mine foremen, neglect to do the very things that we told the Board of Examiners were required for the safe operation of a mine.

Many a foreman has failed to practice what he has preached, and I cannot claim for myself any exception to the rule. It is often true that a confession is good for the soul; and, to be honest, I must confess that I have at times gone contrary to the mine rules and regulations when conditions prevailed that seemed to demand such a course. In doing so, I have often realized that I was setting a poor example to the men in my charge.

It is true that a mine foreman is apt to feel as did one foreman whom I knew some years ago and who continually cautioned his men with the words, "Don't do as I do, but as I say." While he would frequently ride a trip of cars out of the mine, at the end of the shift, he would discharge a man for doing the same thing. The company had numerous signs posted on all haulage roads and sidetracks, in that mine, forbidding the men to ride a loaded trip. It must be admitted that a foreman's example will go further toward maintaining discipline than any number of rules, regulations and signs.

Many a miner, like myself, can look back and remember more than one accident that could have been avoided, in his experience, had he practiced what he preached. At the present time it is more than ever the duty of a mine foreman to consider himself indirectly in the service of the United States Government and to give, for that service, the best that is in him.

Keep a careful watch over every operation in the mine. Install whatever is lacking that the law requires for safety and see that the rules for safety are strictly obeyed. Keep in mind that little mistakes and slight omissions often lead to terrible disasters. In doing this, mine foremen will preserve lives and property, at a time when both are needed in the service of the country. Above all, we must remember to practice what we preach and not give the impression that safety rules and regulations are so much hot air.

Farr, Colo.

ROBERT A. MARSHALL.

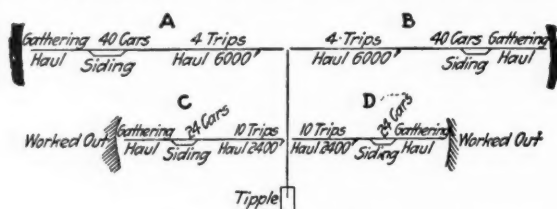
Inquiries of General Interest

Number of Cars Required

I have been interested in the reply given to the question asked by "Superintendent," *Coal Age*, Sept. 1, p. 385, and completed in the issue of Sept. 22, p. 509. It seems to me that the practical conditions existing, in respect to the gathering and haulage of cars in the mine, have not been as carefully considered as they should be in replying to this question.

In that reply it is estimated that, for an equal speed of hauling, there would be four trips of 40 cars, in each long-haul section, and 10 trips of 24 cars, in each short-haul section, which makes a total of $2(160 + 240) = 800$ cars hauled per day in the mine, and a total output of 1600 tons. So far so good.

Now, on this basis, it would seem to me that there should be a full trip of 40 cars standing on each long-haul siding and 24 cars on each short-haul siding, which makes 128 cars always on the sidings. I have drawn a diagram



to illustrate the assumed distribution of the cars and indicated the number of trips on each haul, which shows eight long hauls and 20 short hauls a day. There are thus 320 cars loaded and handled in the long-haul sections marked A, B, and 480 in the short-haul sections C, D. Then, since each miner loads four cars a day, there would be 40 miners in each of the former sections of the mine and 60 miners in each of the latter sections, which, also, is clear enough.

Allow me to suggest, however, that the trips of 25 and 40 cars, mentioned by "Superintendent," can be made up by hauling 15 cars from the longer sections and adding these to 25 cars from the shorter sections, making the total outgoing trip 40 cars in all.

On this basis, I estimate as follows:

	Cars
Long hauls, standing in rooms.....	80
Long hauls, standing on sidings.....	80
Long haul, in transit.....	15
Short haul, standing in rooms.....	50
Short haul, on sidetracks.....	50
Short haul, in transit.....	25
Standing on tippie.....	40
Out of commission.....	10
Total.....	350

The 15 cars in transit on each long haul, added to the 25 cars on each short haul, make the 40-car trip, as I have said; and 20 of these 40-car trips hauled out of the mine each day make 800 cars in all and give a total daily output of 1600 tons.

The eight hauls from the longer sections and the 20 hauls from the shorter sections make 28 round trips;

and allowing 2 minutes for changing ropes at each end, gives $4 \times 28 = 112$ minutes delay. This reduces the total running time from 8 hours to, say 6 hours per day, and requires a speed of about 6 miles per hour.

Wheeling, W. Va.

R. Z. VIRGIN.

Mr. Virgin has made some good suggestions. We would differ, however, from his estimate that it requires no more cars standing in the rooms in each section than on the corresponding sidetrack. It must be remembered that all the miners are not in every day. Also, each driver, on a gathering haul, must put one load on the siding for each empty he takes away, keeping the siding full to capacity counting both loaded and empty cars. A trip must also be made up within the time that the triprider returns to the siding.

In each long-haul section the gathering drivers must handle the 160 cars a day loaded by 40 miners. Likewise, in each short-haul section the gathering drivers must handle 240 cars a day loaded by 60 miners. To insure a constant supply of loaded cars, it is only safe to estimate that, say three-fourths of the miners, at least, have cars standing in their places, either loaded or ready for loading.

On this basis, there are $2(40 + 24) = 128$ cars on sidings and $2 \times \frac{1}{2}(40 + 60) = 150$ cars standing in rooms. In tailrope haulage but one trip can be hauled at a time, which requires, say 40 cars in transit and 40 cars standing on the tippie. Then, if we allow for 12 cars undergoing repairs or idle, the grand total is 370 cars instead of 350, as previously estimated.

The total distance hauled in 28 round trips, in this case, is $2(8 \times 6000) + 2(20 \times 2400) = 192,000$ ft. The total working time is eight hours or $8 \times 60 = 480$ minutes. Hauling at the rate of 6 miles per hour, or 528 ft. per minute, gives, for the total running time, $192,000 \div 528 =$ say 360 minutes. This allows $480 - 360 = 120$ minutes for making $2 \times 28 = 56$ changes of ropes, at each end of each haul, or slightly more than two minutes for each change.

In order to insure no delay, however, it is necessary to construct a schedule of hauling from the different sections; and, for this purpose we have designated the long-haul sections A and B, and the short-haul sections C and D, respectively, as indicated in the diagram. Each long-haul section loads 160 cars a day, or a car in $480 \div 160 = 3$ minutes; while each short-haul section loads 240 cars a day, or a car in $480 \div 240 = 2$ minutes. This requires $3 \times 40 = 120$ minutes to make up a trip on each of the long hauls, and $2 \times 24 = 48$ minutes on each short haul. A round trip, long haul, consumes 24 minutes and, short haul, $14\frac{1}{2}$ minutes. The following schedule will complete the 28 trips in 8 hours without delay, but the short-haul sidings will be required, at times, to hold 34 cars: 1c, 2d, 3a, 4c, 5d, 6c, 7b, 8d, 9c, 10a, 11d, 12c, 13d, 14b, 15c, 16d, 17a, 18c, 19d, 20c, 21b, 22d, 23c, 24a, 25d, 26c, 27d, 28b.

Examination Questions

Illinois Mine-Rescue Superintendents' Examination, Sept. 15, 1917

(Selected Questions)

Ques.—Which is more valuable at a mine—a number of employees possessing a knowledge of artificial respiration, or a number of pulmotors? State reason for answer.

Ans.—A number of pulmotors would be useless, in case of accident at a mine, unless there were also a number of trained first-aid men who understood their use and how to apply them. On the other hand, a number of employees possessing a knowledge of artificial respiration would be able to apply these methods without the use of pulmotors, should none of this apparatus be available. The knowledge and experience of the first-aiders who have been thoroughly trained is therefore the most valuable asset, relating to first-aid work at a mine.

Ques.—Explain how you would render first aid to a miner with a fractured rib, and what means you would take to get him from the place of accident to the surface.

Ans.—A fracture of one or more ribs would be indicated by a sharp pain in the chest when taking a full breath. If the fracture is serious, shock may result, in which case send for a doctor at once. First-aid treatment for a simple fracture of a rib consists in binding a bandage or a large towel tightly about the body over the chest, in order to give the latter the needed support when taking a breath, and preventing as far as possible the movement of the broken bones against each other, which would cause a sharp pain. Probably pain and further injury will be minimized by carefully supporting the patient and assisting him on his way out of the mine. Where this is not practicable a stretcher should be brought, and the man should be carried carefully to the shaft or slope bottom, and taken to the surface, where he should be placed in an ambulance.

Ques.—What qualities should a man possess to make an efficient helmet man?

Ans.—A man engaging in mine-rescue work and wearing breathing apparatus should be in good physical condition and thoroughly trained in the use of the apparatus he wears. The man should neither be too young or too old, preferably between the ages of 22 and 45 years. Before being permitted to undergo the necessary training in rescue work and the use of breathing apparatus, a man should possess a physician's certificate showing that he is in good physical condition.

The wearer of breathing apparatus must be of temperate habits and possess a calm disposition free from nervousness, which will enable him to act deliberately at all times. It is important that he has no difficulty in the nose, throat or lungs, or in the action of the heart. He must be naturally of a fearless disposition and, above all, thoroughly acquainted with mining conditions.

Ques.—Name the principal features of the Fleuss apparatus.

Ans.—The Fleuss or Proto breathing apparatus consists of two steel cylinders, designed for holding oxygen at a pressure of 120 atmospheres and equipped with a reducing valve, an emergency or bypass valve, a main valve controlling the supply of oxygen to the breathing bag, an inhaling and an exhaling valve and a relief valve.

A regenerating bag, designed to hold 4 lb. of caustic soda, provides for the absorption of the carbon dioxide contained in the air exhaled from the lungs, making it possible to again utilize the remaining nitrogen of the air by the addition of fresh oxygen from the cylinders. The apparatus is also equipped with a pressure gage and valve that enable the wearer to determine the oxygen supply remaining in the cylinders. The Fleuss apparatus has no helmet, but is provided with a mouthpiece and nose clip.

Ques.—What is the purpose of the bypass and when should it be used?

Ans.—The purpose of the bypass and valve is to enable the wearer of the apparatus to supply the breathing bag with oxygen direct from the cylinders. This is only necessary in case the reducing valve fails to work properly and the breathing bag becomes deflated. The same necessity may arise, however, when the wearer is crawling through a tight place and the breathing bag is accidentally pressed so that a portion of the oxygen and air escapes through the relief valve. Otherwise, the bypass valve should be kept tightly closed.

Ques.—Why should there be gaskets at all connections?

Ans.—Gaskets are necessary to render the unions airtight and thus prevent the escape of oxygen or air through them, or the entry of poisonous gases into the apparatus.

Ques.—How would you prove that the oxygen cylinder was sufficiently charged for 2 hours' work?

Ans.—Open the main valve and examine the pressure gage. If the oxygen cylinders are fully charged, the gage will register 120 atmospheres. Another test is to attach a measuring bag to the flexible tube leading from the reducing valve to the breathing bag. If the reducing valve is working properly, it should deliver 2 liters per minute; or, the flow through the reducing valve can be measured by a meter.

Ques.—In case of a gaseous mine, which would you recommend: (a) A local mine-rescue helmet team; (b) Competent mine examiners? State the reasons for your answer.

Ans.—A mine generating explosive gas in sufficient quantity to be designated a "gaseous mine" cannot be operated safely without the employment of competent and experienced mine examiners, which are therefore the first consideration and should be recommended in preference to a mine-rescue team. That is not to say, however, that a rescue team should not be maintained at a gassy mine, as both are important.

Coal and Coke News

For the Busy Reader

Coal is being seized at the point of guns in Ohio, so acute has become the fuel situation in that state.

Coal operators will hold a meeting in Pittsburgh, Penn., Oct. 23, to plan for cooperation with the Government in producing coal this winter.

Asked to turn on the heat in the Fuel Administrator's quarters in the capital last week, the janitor reported that he had been all over town and couldn't get coal anywhere!

Navy list mines in the New River, W. Va., field are supplying coal to the Government at its own made price—at 20, 30, 40 and 50c, a ton less than costs of production.

Garfield is showing figures to prove there is no actual shortage of coal. He declares production this year is fully 10 per cent. greater than 1916, which was a record breaker.

"Make a noise loud enough to be heard in Washington," said James J. Storrow, fuel director of New England, before the Associated Industries of Massachusetts last week, "and maybe you'll get the coal you need."

West Virginia is the main source of supply for soft coal in the eastern half of the United States, and at the present rate of consumption is capable of supplying the needs of the nation for about 250 years longer.

The seizure of the mines and of the stocks of coal in the hands of wholesalers, jobbers and retailers still remains a possibility under the law, and it will be resorted to if present arrangements to control the industry fail.

The fuel administration is preparing to modify the embargo on coal shipments to Canada, as it has been found that Canada can be supplied in limited quantities without threatening the supply now going to the Northwest.

Mines in the Fairmont-Clarksburg region, W. Va., could have loaded \$2,170 tons more of coal in the last period in September if the Baltimore & Ohio R.R. had furnished sufficient cars to run the mines to capacity.

Garfield is still busy organizing his fuel administration, the personnel of which is expected to reach 10,000, and in the meantime complaints are reaching Washington from all quarters that the coal situation is growing perilous.

The present system of fuel administration is to be given a thorough trial. The difficulties which have beset the coal trade are looked upon by the President and Dr. Garfield as due to the fact that the system has not yet been put in working order.

Here's a new one: "I'll bet you \$2.50 a ton you can't deliver 20 carloads at our mill tomorrow," said a manufacturer to an operator. "Done," the mine operator replied, and the coal was delivered, the operator winning the bet and getting \$4.50 a ton for his coal, \$2.50 better than the Government price.

To a nation at war the first essential is money. Soldiers and sailors must be armed and equipped with the best that money can buy; they must be provided with the necessary food and clothing; their wages must be paid; their dependents must be taken care of; they must be supplied with a reasonable amount of life insurance—and for all these and other vital things the Government has issued Liberty Loan bonds. Have you bought yours?

Harrisburg, Penn.

The State Compensation Board has announced a decision by Commissioner John A. Scott in which a ruling is made regarding payment of wages during a period of disability. In the case cited, it is held that the record disclosed no approved compensation agreement and Mr. Scott says: "The fact that the regular wages due the employee were paid by the employer during the period of the employee's disability is not a compliance with the act unless the payment of such wages was clearly agreed upon as a discharge of the employer's compensation liability; otherwise it will be treated as a gratuity. In the absence of proof that the payment and receipt of wages during periods of disability was understood as payment of compensation liability the payment of such wages will be no defense to the claim petition."

Another interesting feature is that the award was made against the defendant company and not against the insurance carrier. The opinion says that enforcement of a contract between an employer and an insurance carrier is not a matter for the board.

The board has made public a Luzerne County decision in which it is held by Judge Straus that "the whole tenor of the Workmen's Compensation Law seems to contemplate control by the board as an administrative body of the subject of awards. It is also held that in all matters of procedure the action of the board is final and that the only matters that may be brought into the court of common pleas by appeal are final decrees either refusing or allowing compensation."

Prominent central Pennsylvania operators predict that Dr. Garfield will grant an increase of \$1.65 to coal prices for this section. The commission is rapidly rounding up figures with which to readjust the price of \$2 fixed by President Wilson some time ago. Dr. Garfield has granted an increase of \$1 per ton to certain mining districts which already have furnished him with cost figures and other information, and the operators of this district say they have every reason to believe that an increase of at least \$1 will be granted for this territory. The increase of 65c. will be granted to carry the advance in wages the operators have agreed to give the miners. Secretaries of the various operating associations in this part of the state are to go to Washington at an early date to submit to the Fuel Administration cost sheets and other information calculated to show what it will cost the operators of this section to grant the wage increase to the miners. B. B. Boose, of Somerset County, will represent the Somerset Coal Operators' Association at the conference and John Lloyd, Jr., will represent the Low Volatile Coal Operators' Association of Pennsylvania.

For the present at least the coal situation in the western part of the state is worse than it has been at any time, as regards supply. The cold weather of the past week brought a very heavy demand that has in many places cleaned up all the available retail coal. Lack of labor and inadequate transportation have cut down production per mine. While with the great increase in the number of new mines there has been an increase in the total production, abnormal conditions and the fact that so much fuel is going to the Lake regions under the Government's preferential order has caused the coal-producing regions in the Pittsburgh district to be short of fuel for their own production.

The embargo by the Pennsylvania Lines West on any freight beyond Rochester, Penn., except coke, Lake coal and Government materials, is working a hardship upon blast furnaces and is partly responsible for some of them being banked, according to reports made here. The shutting off of coal shipments to the Valleys has interfered considerably with operations in that district. It is also stated that concerns that operate byproduct coke ovens are suffering greatly because of inability to secure coal for the byproduct plants.

Production is also curtailed by strikes over all kinds of trivial matters. Miners are making big money, don't work every day and strike at any opportunity. Operators are complaining that the Government conscripts men for the army and profits by excess taxes, then fixes prices arbitrarily, but takes no action to make labor do its share.

PENNSYLVANIA

Anthracite

Wilkes-Barre—Advance reports on its September anthracite tonnage, made public recently by the Lehigh Valley Coal Co., indicated a marked reduction. A number of strikes over small colliery disputes tied up operations in various sections in September and affected the output.

Pottsville—As the result of an investigation which he has been pushing, Frank Reese, a former member of the Legislature and representing anthracite consumers in the Schuylkill region, declares that coal companies are the greatest slackers in the state in the payment of taxes. Reese declares that he will furnish the public, when his investigation is complete, with specific instances of "tax dodging" by coal corporations. Several clerks are now compiling the information which he has obtained.

Dupont—Julian Roncoskey, aged 17 years, a doorboy at the Fernwood colliery of the Hillside Coal and Iron Co., was the recipient of a handsome gold watch for saving a miner named Martin Burak from an untimely death. The doorboy succeeded in bringing the injured man to the foot of the main shaft, where medical aid was summoned. The man is today fully recovered from the injury. Young Roncoskey was summoned to the office of Captain W. A. May, president of the company, and in presence of the officials of the company the award was made.

Pittston—The Pittston District Mining Institute met on Oct. 15, the opening night of its Fall meetings, in the Y. M. C. A., and a fine program was arranged. The Institute will hold monthly meetings.

Lebanon—The eastern section of this city was severely shaken recently by the explosion of coal dust in the coal-pulverizing plant of the Bethlehem Steel Co.'s electrically operated steel mill. There was a burst of flame which almost completely wrecked the building. Many workmen were more or less burned.

Yorktown—Ice that formed in the winters of the 60's and 70's is being uncovered by the Lehigh Valley Coal Co. in running the big culm banks of the earlier mining days through the breakers to meet the demand for anthracite.

Nanticoke—Due to the shortage of labor at the various collieries, the students of the High School have been appealed to. In addition to their studies a number of these boys will work from 2 to 6 o'clock each day at the various collieries of the Susquehanna and Delaware, Lackawanna & Western Railroad, Coal Department.

Shenandoah—Fire recently destroyed the Knickerbocker colliery locomotive house, and badly damaged two 20-ton locomotives. A new \$50,000 washery a short distance away was threatened, but a calm night favored the firemen, who saved the washery and kept hundreds of employees from being thrown out of work.

Mahanoy City—After holding a lease for 30 years on the Mora colliery, owned by the Mill Creek Coal Co., the Dodson Coal Co. will cease operating the colliery Dec. 31. The Dodson Coal Co. will grant all employees residing at Morea Town free rent until expiration of the lease. The company also had a lease on the houses.

Reading—For the first time this season canal boats bound for Tidewater passed through the Schuylkill canal recently loaded with coal.

Hazleton—In an effort to press home economy on the officials in charge of mines, the executives of the Lehigh Valley Coal Co. have prepared and issued to foremen a printed list of the cost of supplies used about the mines. These lists are included in a neat memorandum book of the loose-leaf type and give an array of information that is truly startling.

Cranberry—Labor-saving devices are being installed at the operations of the Cranberry Creek Coal Co. A dragline will hereafter convey the material from the culm banks to the breaker, thus saving the use of a hoisting engine and cars formerly used. Since the Cranberry Creek Coal Co. has taken over the operations from A. Pardee Co., improvements estimated at from \$300,000 to \$400,000 have been made, and the force of men is greater than at any time in the history of the works. Many of the men are kept on straight seven-day a week shifts.

Drifton—The plane of the Drifton breaker of the Lehigh Valley Coal Co. is being repaired at night so that there will be no interference with the operation of the colliery. In normal years it was customary to shut down a mine when improvements of this character were necessary, but producers now cannot afford to lose any time.

Seranton—That the Thirteenth regiment armory may be free from damage of caves, Governor M. G. Brumbaugh, on Oct. 10, authorized the state armory board to expend \$15,000 more, making a total of \$75,000 spent on the structure to make it safe. When the armory was badly damaged several years ago by mine caves, Governor Brumbaugh authorized \$50,000 to be spent to save the building.

Bituminous

Savan—The dinkey engine, used on the tram road from the mine to the tippie of the Savan Coal Co., went through the trestle over Mahoning Creek and the engine and a trip of cars landed in the bed of the stream. One of the stringers in the trestle broke and caused the mishap. The engineer, Charles Shank, was badly scalded.

Johnstown—Seventy-five new dwelling houses have recently been completed at Claghorn for the Vinton Colliery Co.

Smithton—The tippie of the Kerginville Coal Co. here was blown up with dynamite last week just after Mine Foreman John Harris had left the tippie office. The explosive was placed under some of the heavy timber bents of the tippie and the charge fired by electricity. The mine will be idle for several days until repairs are made. Chief of Police Moore and two foreigners have been arrested in connection with the explosion.

WEST VIRGINIA

Beckley—Trouble between rival factions of employees in the mines of the Raleigh Coal and Coke Co., at Raleigh, culminated recently in the wrecking of two homes owned by two negro nonunion miners. Although the families were in the houses, no one was seriously hurt.

Arrangements for cheaper coal for domestic consumers of Beckley have been perfected. It now seems probable that the people of the city will be supplied with coal for the winter at a price not exceeding \$3.75 a ton for run-of-mine. Formerly as high as \$5.75 a ton had been paid.

Bethany—This city was recently in the grip of a coal famine and as a result the town went without heat and light. The Bethany college power house, which furnishes light and heat for the college buildings, was forced to suspend.

ALABAMA

Birmingham—Three negroes and one white man, convicts employed in the Flat Top mines of the Sloss-Sheffield Steel and Iron Co. as drivers, were instantly killed Oct. 12. The men were following a loaded trip out of the slope, and the cars broke loose and rushed down upon them, resulting in the death of the drivers and six mules, which they were returning to the surface. It is stated that these employees were traveling the slope in violation of the rules of both the state and the Sloss company, a manway for their use being provided parallel to the haulage way.

Orient—The Chicago, Wilmington & Franklin Coal Co.'s Orient mine, in Franklin County, Illinois, broke its record for a single day's operation by hoisting 5234 tons in 8 hours on Oct. 12. The record held by the county was made by the Bell & Zoller Mining Co., Mar. 29, 1917, when 5254 tons was hoisted at the Zeigler shaft in 8 hours.

OHIO

Cincinnati—The first real cold weather of the season, coming early, found the city hall and other city buildings without coal, and by calling on the coal trade for extra efforts a few tons were secured for imme-

diately use. In several instances firemen, in order to secure fuel for the engines of the fire department and for heating, confiscated coal in near-by yards, giving receipts, under instructions from the chief of the department. The situation in the city is serious, especially should the cold weather continue.

Columbus—Mayors of more than thirty Ohio cities have either come to Columbus in person or have written urgent letters, asking that some steps be taken to relieve the coal famine which is in evidence throughout the state. Special shipments are desired, and the State Coal Clearing House, established for the purpose of directing coal to points where it is needed, is doing everything possible to meet the situation by sending coal from Ohio mines to the cities where the shortage is acute.

To relieve the stress of a fuel famine in many sections of the state, mayors and other public officials, with the connivance of the Ohio Clearing House, have confiscated hundreds of cars of coal throughout the state. Governor Cox ordered 1000 tons diverted to supply the City of Dayton, and fuel has been confiscated in almost every section of the Buckeye State.

Lima—City authorities recently stopped a Baltimore & Ohio train and seized ten carloads of coal forcing the train crew to switch the cars to the point desired, where they were unloaded by city teams, in spite of the efforts of railroad officials to prevent the movement of the cars.

Youngstown—Miners employed in small mines near this city, located on the tracks of the Youngstown & Suburban Railway Co., have struck for \$2.50 a ton. The mines are for the most part electrically operated, and officials declare that the compensation demanded is unreasonable and that they will not operate under such a rate of payment.

Stuebenville—It was authoritatively stated that there are more than 1000 cars of coal on sidings of the Cleveland & Pittsburgh R.R. between Martins Ferry and Toronto, Ohio, and 300 of them between Steubenville and Toronto. Between here and Wellsville every siding is jammed with coal trains, it is stated. In spite of this the Board of Education failed to receive a single bid on a contract for supplying the schools with coal this winter.

Ravenna—Threatened with a shutdown on account of shortage of coal at the Akron water-works, northwest of this city, the Akron authorities confiscated a carload of coal from the Pennsylvania tracks one day last week. Railroad detectives were then placed on guard. The next day city guards appeared with rifles and confiscated three more cars. The detectives made no resistance.

ILLINOIS

Bloomington—The Bloomington City Council, in response to complaints of citizens that they are unable to get coal from dealers, has appropriated \$1000 and placed it in the hands of Mayor E. E. Jones to establish a municipal coal yard. Coal is to be sold at cost, plus delivery charges. Cash payment will be required and the money received will be used to purchase more supplies and keep the yard going.

Collinsville—The cornerstone of the new \$100,000 labor temple and miners' institute was laid recently. There was a parade of miners and other union men, followed by addresses. All the coal mines of the district were closed for the day. Frank Farrington, president of the United Mine Workers of Illinois, officiated at the cornerstone laying. "Viriden Day," the anniversary of the Viriden mine riots of Oct. 12, 1898, was the day selected for the ceremony.

Lincoln—At the instance of business interests the Commercial Club will ask the Illinois Utilities Commission to order a reciprocal exchange of switching facilities between the Chicago & Alton and the Illinois Central railroads. This interchange was formerly practiced but has latterly been discontinued, necessitating long hauls of coal and other freight and consequent delay.

Until the recent ruling of Fuel Administrator Garfield, that the prices fixed by the President apply to wagon delivery from the mines, the operators charged a higher rate for such coal. As soon as the ruling was announced, however, they announced screened coal at \$2.20 and mine-run at \$1.95. The day following the announcement about 100 wagons were lined up at the mines from the town and the surrounding country and there has been a jam of wagons every day.

Springfield—United Mine Workers' unions are being solicited to purchase stock in a proposed "jitney" corporation to compete with the street-car company, employees of which have been on strike for several weeks. Stock books are to be opened by the local unions.

The north-bound main track of the Chicago & Alton R.R., north of the Chicago, Peoria & St. Louis mine, has settled for a distance of 500 ft. and to a depth ranging from 4 in. to 2 ft. The subsidence was so gradual that the roadbed was not damaged.

Belleville—Mine officials and employees of the Belleville district attended a meeting here Sunday at which Edward Dobbins, a member of the Executive Board of the United Mine Workers, explained the provisions of the new agreement of the miners' union with the operators which was recently sanctioned in Washington.

MISSOURI

Fulton—Operators here had decided to shut down because they feared Federal enforcement of \$2.95 a ton at the mines. Attorney General McAllister gave operators permission to charge 16c. a bushel for coal delivered in bins. Local conditions at the mines as presented by the operators convinced the attorney general the price was reasonable.

UTAH

Ogden—Alleging that the officers have illegally and fraudulently mismanaged the affairs of the Lincoln-Hemmerer Coal Co., C. F. Roberson and other stockholders recently filed another petition in the district court here, requesting that a receiver be appointed.

Foreign News

London, Ont.—The citizens have passed a bylaw to raise \$25,000 to establish a municipal coal yard. The project has been approved by the Railway and Municipal Board, and contracts for a supply are being negotiated.

Sydney Mines, N. S.—Five hundred miners in the employ of the Nova Scotia Steel and Coal Co., have asked the Canadian government to take over the coal mines of the company and provide work for the men now idle. They state that in the new mine, put down three years ago, they only had 14 days' work in September and that they were informed by J. Brown, the general superintendent, that they were kept idle because the company could not make a profit out of their labor. The matter is being investigated by Fuel Controller Magrath.

Anox, B. C.—The Grandy Consolidated Mining, Smelting and Power Co. has decided to make its own coke for the Anox smelter and has purchased coal lands on Vancouver Island. The amount of \$1,000,000 or more will be spent in the next 18 months in carrying out the project.

Amsterdam, Holland—Dutch newspapers announce that Germany has practically agreed to send Holland 300,000 tons of coal a month in exchange for some unnamed concessions. The agreement is reported to have been reached by delegates representing both governments at The Hague.

Personals

Tully Boyce, who for the past 20 years was in charge of outside operations at No. 1 mine of the Western Fuel Co., Nanaimo, B. C., recently retired from service and will devote his energies to other work in future.

E. P. McOlvin, formerly general manager of the Braxton Pittsburgh Coal Co., of Braxton, W. Va., has accepted the superintendency of the Phoenix mine of the Alpha Portland Cement Co., at Reynoldsville, West Virginia.

Thomas Stockdale, of Bramwell, W. Va., has been appointed mine inspector of the twelfth district, embracing all mines on the Widemouth division from Coopers to Matoaka. Mr. Stockdale succeeds R. Erskin, who resigned to go to Kentucky to operate a coal mine at Lothair, Putnam County.

John B. LaGarde, of Anniston, Ala., formerly president of the La Garde Lime and Stone Co., has been appointed secretary to the Alabama coal administration bureau.

by S. P. Kennedy, state coal administrator. Mr. La Garde is one of the best-informed men in Alabama on mining and industrial affairs.

William N. Page, of Ansted, W. Va., one of the best-known coal operators in that part of the state, has retired from active work on account of failing eyesight. He was the first president of the West Virginia Coal Operators' Association and contributed largely to better mining conditions in the State of West Virginia.

Charles Dorrance has been named as general manager of both the Delaware & Hudson Co. and the Hudson Coal Co., to succeed Cadwallader Evans, who recently resigned. Mr. Dorrance was assistant superintendent of the Hudson Coal Co., and in his new capacity will have supervision of the preparation of coal for market and also have charge of the operating and mining.

John E. Williams, of Streator, Ill., was appointed fuel administrator for Illinois. Mr. Williams was born in Wales in 1853 and came to America when 11 years of age. At the age of 13 he began work in the Illinois coal mines and worked in the industry until he was 30. He has acted as mediator for both the mine workers and the operators, and sprang into prominence at the time of the Cherry mine disaster.

Edwin C. Luther, of Pottsville, Penn., has been appointed by William Potter, the state fuel administrator, as a coal expert to assist him in an advisory capacity. Mr. Luther is a coal and mining engineer and is trustee for the Peerless Coal and Coke Co., of Vivian, W. Va. He was for years engineer for the Shaefer Estate, anthracite miners, and is a son of the late R. C. Luther, formerly general manager of the Philadelphia & Reading Coal and Iron Co.

Obituary

Robert H. Large, connected with the Pennsylvania R.R., Broad St. Station, Philadelphia, Penn., in the capacity of coal traffic manager, died Oct. 9, at the University Hospital following an operation. Mr. Large was 42 years of age.

Thomas Russell, mine manager for the Crows Nest Pass Coal Co., and one of the best-known mining men in British Columbia, is dead. The late Mr. Russell had a lifelong experience in colliery operations and management. He is survived by his widow, three daughters and one son.

Eugene Franz Roeber, Ph.D., editor of "Metallurgical and Chemical Engineering," one of the McGraw-Hill Publishing Co.'s papers, died Oct. 17. He was born Oct. 7, 1867, in Torgau, Germany, and received his education in the universities of Jena, Halle and Berlin. He came to the United States in 1894 to engage in electrical engineering work, later becoming editor of "Electrochemical Industry" and its successor, "Metallurgical and Chemical Engineering."

John McBride, a well-known labor leader of Columbus, Ohio, was killed in a runaway accident at Globe, Arizona, last week. Mr. McBride was well and favorably known among labor circles and was president of the Union Mine Workers of America for some time. During his presidency he instituted the checkoff and the closed-shop ideas. He was president of the American Federation of Labor for one year, being defeated for reelection by Samuel Gompers. He was 61 years of age.

Publications Received

"Report on the Price of Gasoline in 1915." Federal Trade Commission. Unillustrated, 224 pp., 5½ x 9 in.

"Annual Report of the Minister of Mines for the Year 1915." Province of British Columbia. Illustrated, 473 pp., 7½ x 10½ in.

"Annual Report of the Mines, 1916." Department of Public Works and Mines, Province of Nova Scotia. Illustrated, 174 pp., 6½ x 9½ in.

"Asphyxiation from Blast-Furnace Gas." By Frederick H. Willcox. Department of the Interior, Bureau of Mines. Technical Paper 106. Illustrated, 69 pp., 5½ x 9 in.

"Mine Taxation in the United States." By Lewis Emanuel Young, E. M., Ph. D., Assistant Professor of Business Organization, University of Illinois. Unillustrated, 275 pp., 6 x 9½ in.

"Monthly Statement of Coal-Mine Fatalities in the United States, February, 1917." Compiled by Albert H. Fay. Department of the Interior, Bureau of Mines. Unillustrated, 32 pp., 5½ x 9 in.

"Oxygen Mine Rescue Apparatus and Physiological Effects on Users." By Yandell Henderson and James W. Paul. Department of the Interior, Bureau of Mines. Illustrated, 102 pp., 5½ x 9 in.

"Motor Gasoline—Properties, Laboratory Methods of Testing and Practical Specifications." By F. W. Dear. Department of the Interior, Bureau of Mines. Technical Paper 166. Illustrated, 27 pp., 5½ x 9 in.

"Carbon Monoxide Poisoning in the Steel Industry." By J. A. Watkins. Past Assistant Surgeon, U. S. Public Health Service. Department of the Interior, Bureau of Mines. Technical Paper 156. Unillustrated, 19 pp., 5½ x 9 in.

"Occurrence and Mitigation of Injurious Dusts in Steel Works." By J. A. Watkins, Past Assistant Surgeon, U. S. Public Health Service. Department of the Interior, Bureau of Mines. Technical Paper 153. Illustrated, 20 pp., 5½ x 9 in.

"An Investigation of the Coals of Canada, with Reference to Their Economic Qualities"—Weathering of Coal. By J. B. Porter, E. M., Ph. D., D. Sc., and others. Canada Department of Mines, Mines Branch. Extra Volume, Supplementary Report No. 83. Illustrated, 188 pp., 6½ x 9½ in.

Trade Catalogs

Automatic Injector. The William Powell Co., Cincinnati, Ohio. Booklet. Pp. 12; 3½ x 6 in.; illustrated.

"Little David" Pneumatic Chipping, Calking and Sealing Hammers. Form 8213. Pp. 16; 6 x 9 in.; illustrated.

Carriek Furnace. Improved Combustion Co., Peoples Gas Building, Chicago, Ill. Catalog. Pp. 38; 8 x 11 in.; illustrated.

"Crown" Coal Pick and Core Breaker. Ingersoll-Rand Co., 11 Broadway, New York. Form 8212. Pp. 4; 6 x 9 in.; illustrated.

"Imperial" Motor Hoists and Stationary Motors. Ingersoll-Rand Co., 11 Broadway, New York. Form 8006. Pp. 20; 6 x 9 in.; illustrated.

Air Receivers, Pressure Tanks and Moisture Traps. Ingersoll-Rand Co., 11 Broadway, New York. Form No. 9102. Pp. 8; 6 x 9 in.; illustrated.

Supplies and Equipment for Mine and Industrial Safety. Mine Safety Appliances Co., 539-41 Fourth Ave., Pittsburgh, Penn. Loose-leaf catalog. 8½ x 11 in.; illustrated.

Elevating, Conveying, Crushing, Screening, Power Transmission Machinery. The Jeffrey Manufacturing Co., Columbus, Ohio. General Catalog No. 84. Pp. 352; 6 x 9 in.; illustrated.

Wire Rope Lubrication. The Texas Co., 17 Battery Place, New York. Pamphlet. Pp. 48; 6 x 9 in.; illustrated. This describes the application of Texaco Crater Compound to wire rope.

Industrial News

Columbus, Ohio.—After taking almost a week to investigate and see if he desired the position, Attorney Homer H. Johnson, of Cleveland, has accepted the place of Ohio Fuel Administrator under Dr. Garfield. He will have his headquarters in Columbus with branch offices in Cleveland and Cincinnati.

Charleston, W. Va.—The Monongahela Valley Coal Operators' Association has issued a statement declaring that unless the \$2 price is modified, many of its members will be forced to suspend operations. It was also announced that a committee will be sent to Washington to present their case to Dr. Garfield.

Philadelphia, Penn.—For the eight months of the year ending with the month of September, the Philadelphia & Reading Coal and Iron Co. exhibits a surplus amounting to \$3,822,837, a gain of \$2,760,709 over the same period of 1916. In this time the gross receipts of the company were \$31,533,939, a gain of \$6,339,156 or 25 per cent.

New York, N. Y.—In order to take care of its rapidly growing business in Cuba, the Vulcan Steel Products Co., of New York City, has opened an office in Havana, under the management of G. O. Simpson. In connection with this office there will be maintained a permanent exhibition of machinery, and steel and iron products, in which the company deals.

Columbus, Ohio.—The Toledo & Ohio Central R.R. raised its embargo on commercial coal shipments for only one day last week when it was again clamped down, effectually stopping all commercial coal

movement. Coal moving to the Lake on this road is delayed by lack of motive power. Many of the assembling yards are congested with loaded cars.

Kay Moor, Penn.—The Low Moor Iron Co., of Virginia, at its Kay Moor mine No. 1, has used coke machines successfully since 1903. It is now using four coke-pulling machines, manufactured at Covington, Va. Recently the company put into operation two of the latest, most improved electric coke-pulling machines. These machines are also used at the company's Covington plant.

Louisville, Ky.—There has been practically no coal except the Western Kentucky coals in the Louisville market for two months. Uncertainty as to prices deterred buying until frost arrived about the 10th, whereupon a rush developed which, incoming supplies being almost nil, practically wiped out the retailers' stocks. Now conditional orders are being filed by all the retailers.

Columbus, Ohio.—No bids at all were received Oct. 10, when Clerk F. M. Ranek, of the Franklin County Board of Commissioners, was to open bids for coal for various county buildings and institutions. The advertisement called for 3000 tons for the county infirmary, 1000 tons for the courthouse, 200 tons for Memorial Hall and various smaller amounts. It is planned to readvertise for bids soon.

Columbus, Ohio.—A meeting of the general managers of coal-carrying roads in Ohio was held recently with the Ohio Utilities Commission and the Ohio Clearing House to iron out the situation with reference to domestic users and steam plants. It was agreed that when coal is shipped commercially upon orders from the Clearing House, the car so shipped would not count against the operator in its apportionment for commercial purposes.

Columbus, Ohio.—The economic department of the Ohio State University has completed a survey of the fuel situation among a number of Columbus families with the following results: Out of 494 families of moderate means visited it was found that 298 were entirely out of coal and that 74 per cent. of the families have no coal at all as compared with 23 per cent. at the same time a year ago. Of the number visited 89 per cent. have less than one ton of coal ahead.

Louisville, Ky.—Walter Parker, of New Orleans, assistant to Secretary of Commerce Redfield for inland waterway transportation, urged at a dinner here that the business interests of Louisville immediately take up the problem of coordinating water and rail transportation so far as this center is concerned and that river-rail terminal and warehouse facilities be provided in every river town. He pledged the assistance of the Government to any private project for carrying out the work.

Albany, N. Y.—Representatives of 21 wholesale coal dealers met here recently and formed the Wholesale Coal Trade Association. New members are being enrolled steadily. The details of the new organization are being worked out at frequent meetings of the board of directors, consisting of W. A. Marshall, G. M. Dexter, J. A. Hill, T. H. Watkins, C. C. Harris, R. H. Burrows, LeBaron S. Willard, W. R. Coyle and W. S. Alden. The new association intends to affiliate with the National Coal Jobbers' Association.

Toledo, Ohio.—Loadings at the docks of the Hocking Valley and Toledo & Ohio Central railroads have been slightly reduced during the week ending Oct. 12. The Toledo & Ohio Central docks loaded 97,000 tons during the week as compared with 99,000 tons the previous week, and since navigation opened they have loaded 1,783,000 tons. The Hocking Valley docks loaded 170,000 tons during the week as compared with 201,000 tons the previous week. The total handled by these docks since the opening of navigation is 3,710,676 tons.

St. Louis, Mo.—W. A. Waugh, who has been investigating coal conditions in St. Louis, has received information that Attorney-General McAllister has authorized operators at Fulton, Mo., to continue charging 16c. a bushel for coal delivered in bins. The operators threatened to shut down rather than sell at the prices fixed by the Government. McAllister was convinced, it is stated, that local conditions made the higher price justifiable. It is not known here where McAllister obtained authority to suspend the Federal law.

St. Louis, Mo.—The Arcade Coal and Mining Co., of Oskaloosa, Mo., and the Liberal Coal and Mining Co. and Barton Ridge Coal Co., of Liberal, Mo., have filed with the Missouri Public Service Commission complaints against the St. Louis & San Francisco Railroad Co., alleging discrimination against them in the distribution



AN APPEAL FOR SUBSCRIPTIONS TO THE SECOND LIBERTY LOAN

Liberty Loan meeting of employees of McGraw-Hill Publishing Co., Inc., publishers of "Coal Age" and other technical magazines, at which was unfurled a service flag with 42 stars, showing that 42 members of the company have entered military service. Since the meeting four more stars have been added.

of cars in favor of companies in the same district under contract to supply the railroad with fuel. A citation has been issued requiring the railroad company to file an answer to the complaints within ten days.

St. Louis, Mo.—A special committee of the Board of Aldermen is investigating means by which a coal shortage in the city may be averted, with special reference to utilization of the municipal bridge for bringing coal across on the railway deck of the bridge, which will be completed in about two weeks. It is proposed to use two locomotives owned by the city to haul coal cars from the east side. The committee has decided that it will be impractical to use the trolley and vehicle deck for coal transportation because of the sharp curves on the approaches.

Philadelphia, Penn.—George C. Coughlin, city and Southern sales agent of the Philadelphia & Reading Coal and Iron Co., headed a committee to call on the retail coal trade in the interest of the Liberty Bond Campaign. Associated with him were F. P. Ryder, of the Lehigh Valley Coal Sales Co.; F. N. Ulrich, of the Lehigh Coal and Navigation Co., and Howard W. Perrin, of the M. A. Hanna Co. In order to thoroughly cover the trade the sales forces of all the companies were utilized for an entire week and excellent results were had in the placing of the securities.

Kansas City, Mo.—J. Lilly, commissioner of the Missouri supreme court, has completed preliminary investigations of coal bureaus in Kansas City. The books of the bureaus were freely thrown open to the state investigators, and it is understood that they had every facility for getting the information they desired as to the manner of handling the statistical information. The Government has received valuable help from the data that have been gathered by these bureaus, one of which was constituted of operators in the Kansas field, and one of local dealers.

Pittsburgh, Penn.—A luncheon meeting of the recently formed Pittsburgh Coal and Coke Exchange, composed of jobbers, held Oct. 13, was addressed by E. M. Platt,

president of the National Coal Jobbers' Association. Mr. Platt has been touring the country laying the case of the national association before jobbers in the different districts. Reference was made to the possibility of the organization being useful after the war, as the Federal Trade Commission has been urging organization on the part of business men, and the Fuel Administration has as a rule given hearings only to representatives of groups of business men and not to individuals.

Charleston, W. Va.—In the case of James H. Barrett and others against the Baltimore & Ohio Railroad Co., involving the question of distribution of open or gondola coal cars, to shippers loading from wagons, the Public Service Commission has decided that railroads must make the same distribution of these cars to wagon shippers, as to operators loading from tipplers. However, the commission also decides that the railroads are not required to furnish team track loaders with cars of any character upon private sidings connected with their lines, unless the sidings are owned by the track loaders, or the loaders shall have the consent of the owners of the sidings.

Jefferson City, Mo.—Attorney-General McAllister announces that statistics gathered by him in a recent investigation at St. Louis, show that St. Louis coal men are clearing 100 per cent. annually on their capital stock at the 1916 quotations for coal. He is tabulating the statistics to be sent to Fuel Administrator Garfield at Washington. A hearing held here has shown that Lexington, Mo., coal is costing dealers 40c. a ton more under Government price regulation than it did before. Lexington coal is being retailed at \$5.25 and Illinois coal at \$5.50 a ton. It developed also that Lexington coal is being sold cheaper in Jefferson City than in Kansas City, although the freight rate from Lexington to Jefferson City is double that from Lexington to Kansas City.

Jefferson City, Mo.—State Auditor Hackmann is holding up bills of John Riner for 155,000 lb. of coal which he claims to have delivered Aug. 30 and Sept. 4 and 8, to

state departments. At the request of Attorney-General McAllister the coal was weighed and found to be 45,107 lb. short. Riner charged at the rate of \$4.75 a ton. Auditor Hackmann says there will be no settlement for the present, even on the state's weights. The state has no coal contract now. Riner was the only bidder when bids were opened. His bid was \$3.95 on track and \$3.98 delivered. Fuel is being obtained temporarily from the West Virginia Coal Co., which had the contract last year at \$2.90 a ton. Riner, already under three indictments for alleged coal irregularities, has been indicted again, charged with attempting to defraud the state by the short weight of 45,107 lb., of the value of \$106.87.

St. Louis, Mo.—The Illinois Public Utilities Commission has announced that it will coincide in the order of the Interstate Commerce Commission, allowing railroads in Illinois to increase the freight rate on coal and coke 15c. a ton. When the Interstate Commerce Commission allowed the increase on interstate shipments the Illinois Public Utilities Commission refused to allow a similar increase on intrastate shipments. The result was that the differential between the St. Louis coal freight rate and the East St. Louis rate, which had been 20c. a ton, was increased to 35c. a ton. This placed St. Louis at such a disadvantage that the Chamber of Commerce and other organizations brought strong pressure to bear upon the Illinois Commission to correct the injustice. For a time it seemed that an appeal to the Supreme Court, which would delay decision for three years, would have to be taken. However, this was obviated when the Illinois commission consented to authorize the increase on intrastate shipments. The new tariff will become effective on October 15. The rate is to remain in effect for one year. An increase of 5 per cent. is allowed also on a variety of other freight, which removes discrimination which has existed in favor of Chicago, which has enjoyed lower intrastate rates than the St. Louis intrastate rates in the Illinois trade territory.

Market Department

GENERAL REVIEW

Cool to cold weather, price fixing, large Government requirements, an inadequate car supply, an abnormal demand and heavy confiscation by the railroads, are disturbing factors that have rendered the general situation critical.

Anthracite—There appears to be no particular diminution in the production of anthracite coal, but many complaints are heard concerning its distribution. Domestic stocks appear to be everywhere light and in those regions which receive both anthracite and bituminous coal, many commercial and manufacturing consumers running short of bituminous have made strenuous efforts to secure enough anthracite to keep their plants in operation. This, of course, removes from the market a considerable percentage of coal which would otherwise find its way to the domestic consumer. During the past week the requirements of the Government, particularly for broken coal, have been heavy, and this also tends to decrease the amount of fuel available for domestic purposes. Weather which has been cool to cold throughout the northern portions of the United States has tended to accentuate the demand for fuel. The retail prices as established by the Coal Administration have called forth much severe criticism from the retailers, many maintaining that the margin of profit permitted is too low to allow the transaction of business, and much confusion has been thereby caused. Dealers nowhere appear to be particularly anxious about what grade of coal they receive, but are willing to accept all the coal of any grade they can get hold of.

Bituminous—Practically no spot coal has yet appeared upon the market at the prices fixed by the Government. While in certain instances sales have been made at this level, and possibly in larger volume than has been reported, they are, nevertheless, the exception rather than the rule. The car supply during the past week has not been adequate, labor is short and many consuming communities, even some of those almost within a stone's throw of the mining regions, are running desperately short of coal. In many regions industrial and public service plants have closed down, as well as the public schools, on account of the lack of fuel. The cold weather prevailing during the past week has accentuated a demand already heavy, and particularly in the region between the Allegheny and Rocky Mountains, conditions are described as being highly critical. It is true, however, that in some places more coal has been stored in cellars than is ordinarily the case, and some people are doubtless hoarding their supply and buying all coal available. While the production at the present time is undoubtedly higher than it was a year ago, it is not sufficient to meet the extraordinary demands imposed by industrial establishments.

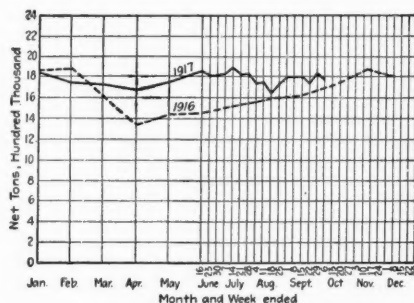
Middle West—While coal appears to be scarce in all regions of the country, this is particularly true of the upper Mississippi Valley. Stocks are short, the supply coming forward is not sufficient to meet the demand and retailers are confused by their inability to determine at what prices they may sell coal. Many protests have gone to Washington, asking that the order fixing the selling price be amended. An unprecedented demand for this season of the year exists throughout this region. No free tonnage is to be had and railroad business is given precedence. As a consequence, stocks of coal accumulated with considerable difficulty last summer are now being heavily drawn upon.

Lake Trade—The embargo on coal shipment to Canada was recently removed. This has resulted in considerably quicker dispatch for some steamers at Lake ports. The volume of Lake business moving to the Northwest is holding up well and it is doubtful if the Northwest country will be short of coal this winter.

A Year Ago—Slowing up in transportation, causing acute anxiety in anthracite at the outside markets, urgent demand for bituminous forces the biggest price advance yet recorded. Iron and steel industries are aggressive buyers. Middle Western producers swamped with orders and prices are a secondary consideration.

COAL PRODUCTION

Last week's production of all bituminous coal, including that made into coke, is estimated at 10,587,593 net tons. As compared with the preceding week (Sept. 23 to 29), this was a decrease of approximately 3.4 per cent. The average produc-



tion per working day (shown graphically in the accompanying curve) was 1,764,599 tons during the week ended Oct. 6. The present daily production, it will be seen, is greater than in October, 1916 (represented by the dotted line), but less than that attained in November, 1916.

ESTIMATED UNITED STATES PRODUCTION OF BITUMINOUS COAL AND OF BEEHIVE COKE

Week Ended	Total Bituminous Including Coal Coked		Beehive Coke (At the Mines)	
	Total	Average for Working Day	Total	Average for Working Day
Sept. 22.....	10,397,978	1,732,986	652,212	108,702
Sept. 29.....	10,939,645	1,823,274	683,224	113,871
Oct. 6*.....	10,587,593	1,764,599	651,251	108,542

* Preliminary estimate, subject to revision.

Rail shipments of coal and coke, upon which are based the Geological Survey's estimates of current production, are exhibited in the following table:

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Sept. 15	Sept. 22	Sept. 29	Oct. 6
Bituminous shipments, 114 roads	190,867	183,090	192,260*	186,831†
Anthracite shipments, 9 roads...	42,903	37,588	42,361	42,362
Beehive coke shipments, 4 roads...	13,666	13,643	14,283	13,636†

* Revised from last report. † Preliminary, subject to revision.

Anthracite shipments (42,362 cars) were almost identical with those during the week ended Sept. 29.

BUSINESS OPINIONS

Iron Age—That Government price fixing is all of the herculean task that the trade prophesied is borne out by the fewness of the items covered in the two agreements so far made. As indicated in "The Iron Age" last week only semi-finished steel was included in the announcement of Oct. 11. Just when additional maximum figures will be settled on is not clear, but it is likely, now that ratios have been established for conversion differences between raw materials and semi-finished products and between the latter and finished forms, that further Government prices will be arrived at without requiring general sessions in Washington between the War Industries Board and the producers.

Dun—Not only has the betterment which recently developed in business been sustained, but it has become more decisive and in some leading departments results already exceed anticipations. Nor does the gain alone appear in volume of transactions, for sellers' views about prices have experienced sudden revision and in some quarters where concessions were lately a feature sharp recoveries are now witnessed.

For the change in conditions, the advancing season provides an important reason, and for the more confident sentiment which has made the improvement possible, the removal of some uncertainties and official assurance of large grain harvests afford adequate explanation.

Bradstreet—Trade continues of large volume, but conservatism as regards future buying seems to be more marked as the high altitudes to which prices for materials as well as labor have soared is causing enough concern to restrict widespread trading, and, moreover, there is a disposition to wait and see how far Governmental price regulation will go. Yet Government orders which flow forth to a variety of lines are more than sufficient to offset any recessions in what might be termed normal operations.

American Wool and Cotton Reporter—The wool market continued strong and active during the week with more or less of an advance. Early frost is one of the important factors to be considered at the present time in the cotton market. Cotton business with spinners has not been very active.

Marshall Field & Co.—Current wholesale shipments of dry goods for the week are in excess of the corresponding period of last year. Road sales for both immediate and future delivery are ahead of the very heavy volume in the same period of a year ago. A larger number of customers have been in the market during the week. Collections are strong.

Atlantic Seaboard

BOSTON

New England situation is extremely critical. Supply of coal at Tidewater loading ports is inadequate to accomplish anything like fairly prompt vessel loadings. Several instances of serious delays, especially at Hampton Roads. Government requirements being large and the confiscation of coal by the railroads have caused the shipper no little apprehension.

The consuming trade is more than visibly disturbed. Among the steam and electric railroads and the other public utilities the question of preferential distribution is being much discussed, and it would not occasion great comment to learn of direct appeals to Administrator Garfield for relief.

The price of coal does not enter into the minds of the consumers. The essential is actual delivery.

The New England Coal Barge and Towers Association formed to provide increased efficiency in operation would undoubtedly accomplish its purpose were coal available upon barges' arrival, but the fact remains that in order to speed up the movement, efforts will avail little where slow loading is involved.

The United States Shipping Board has requisitioned all steamer transportation of 2500 tons capacity and over, effective at noon, Oct. 15. Instructions to steamer owners are perhaps a little vague, but it is understood there will be no change for the present in operation except that such operation is under the Shipping Board control both as to disposition and rates.

Another feature of the week's developments is that of the projected organization of the New England Coal Jobbers' Association. A meeting was held in Boston last week and partial progress was made toward organization, and a subsequent meeting was called for Tuesday, Oct. 16.

J. J. Storrow, the New England Coal Administrator, has named the various Local Boards for Massachusetts, who will conduct investigation of retail prices. Nothing has been outlined as to what methods will be pursued.

The vessel market is fairly strong. Movements continue to be affected by slow loading. Rates are quoted at \$3 per ton Hampton Roads ports to Boston, and \$1.75 per ton New York to Boston.

The anthracite situation continues to exhibit severe shortage in supply in certain localities. Notwithstanding increase in production of anthracite, the receipts

in New England have not perceptibly improved. There is fair movement all-rail, but at Tidewater points receipts are totally insufficient, and at places where winter weather will soon close ports to navigation, the question of immediate receipts is vital.

NEW YORK

Federal authorities warned of local conditions and urged to increase shipments here. Conferences held to discuss the situation. Shipments are slower and stocks are reduced. Dealers loud in their complaints. Bituminous supplies scarce and sales of free coals are seldom heard of. Central Pennsylvania operators urged to take care of Government needs.

Anthracite—The lack of coal here is becoming more serious and several dealers are on the verge of having clean bins. Conditions have become so acute that the Federal authorities have been told that unless New York gets larger shipments there is danger of great suffering this winter. Several of the yards are almost clear of supplies and are in danger of being closed until more coal is assured their owners. Conferences were held here the middle of this week looking to a betterment of conditions and also to a readjustment of retail prices in conformity with the order of Dr. Garfield.

The appointment of Albert H. Wiggin as the Fuel Administrator for this state was favorably received by the local trade, Mr. Wiggin being well known to many of the most prominent coalmen.

Shippers are receiving many complaints of slow shipments but can do nothing to remedy conditions. Company coal is scarcer because of heavy shipments diverted to the West and the confiscation of large tonnages under the direction of the Federal authorities. There is hardly any individual coal to be had here. Middlemen are hard put to it to get tonnages sufficient to meet their wants and it would not be surprising if some of them closed their offices until the situation becomes clarified.

A meeting of operators was held here last Thursday at which time it is understood, the question of a possible demand for higher pay by the mine workers was discussed. Other matters were talked of it is understood, but nothing was learned as to the outcome of the meeting.

Egg and stove coals are practically out of the local situation while chestnut is nearly so. In many retail yards the latter size is the only one to be found, most dealers not having either egg or stove on hand.

In pointing out local conditions to Dr. Garfield he has been told that, most of the large consumers, such as the city government, are buying from hand to mouth and that should this condition continue until cold weather there is likely to be untold suffering among the poorer classes who have to buy coal as they require it.

Statistics made public in Washington early this week indicate that New York has received more coal this year than last, which if so, indicates to the dealers that consumption has increased correspondingly. This is partially due to the condition under which the bituminous market has been laboring for many months. Retailers, as a rule, do not believe the assertions that householders are better supplied with this winter's supplies than heretofore except in isolated cases where more space has been allotted to storage purposes. Many of them assert they have run short-handed for several months owing to the scarcity of coal, and most of them have unfilled orders on their books which have been there for a long time.

Retail dealers since the issuance of the order fixing retail prices have devoted much of their time to ascertaining what it has cost them to handle coal. Most of the offices have been visited this week by agents of the fuel administration.

The steam coals are extremely strong in demand, with all three sizes scarce. Mine prices are slightly higher than for Tidewater coal. There is a heavy inquiry from large consumers who heretofore have depended largely on bituminous.

Current quotations, per gross tons, f.o.b. Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$5.95	\$6.70
Egg.....	5.85	6.60
Stove.....	6.10	6.85
Chestnut.....	6.20	6.95
Pea.....	4.70	5.45
Buck.....	3.95@4.65	5.25@5.50
Rice.....	3.40@3.60	4.00@4.35
Barley.....	2.90@3.15	2.50@2.60
Boiler.....	3.15@3.30	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—There has been no improvement in the local situation. Supplies appear to be shorter if anything and there are many plants where the bins are about empty. Some plants have already suspended operations for brief periods because of the failure to secure contract requirements and failure to pick up free coals in the harbor.

It is understood that operators in central Pennsylvania are being urged to furnish coal to heat the Government buildings in Washington. These buildings have heretofore used Southern coals which have been diverted to other uses in connection with the war. It is also understood that the prices to be paid for any coal so shipped will be adjusted according to any revision of the President's price-list regarding Pennsylvania coals.

The granting of increases to the operators in the Central Competitive district hold out hope to the Pennsylvania and other operators whose coals come to this market. These operators have sent their cost sheets to Washington and several operators have been there for several days conferring with the authorities.

The question of contracts is one of worry to many operators and shippers. To some it appears as if the authorities were crossing each other and an agreement as to an interpretation of the ruling of Dr. Garfield is eagerly awaited.

Shipment to the Lakes and New England continues heavy, much to the detriment of local consumers. Car supply remains bad, hardly any mine receiving a sufficient number of cars to keep it going. Because of this condition operators do not anticipate any great improvement in production.

No sales of \$2 coal are reported and demand is not as strong as it was a couple of weeks ago because of the absence of spot coals.

Demand for bunker coal has dropped because of the failure to secure licenses and also many of the vessels go to the Southern ports for their supplies.

PHILADELPHIA

Anthracite retailers anxious as to future. Shipments do not increase. Operators claim poor retail distribution. Government calls heavily for broken coal. Dealers not particular as to sizes. New retail prices soon to be issued. Bituminous men discouraged. Preferential shipments cut commercial coal. Wagon coals increase. Car supply unimproved.

Anthracite—Both branches of the trade seem to be realizing more than ever the seriousness of the coal situation. The most optimistic retailers are now alarmed. Until recently they could not believe the big shippers would be unable to fill their yards before the coal was needed. While they are not now rash with their promises of prompt deliveries they continue to book orders and inform their customers they expect to make deliveries. No shipper will give them much encouragement and they have no idea who will ship the coal, or when, but they keep on selling coal and hoping and pleading for it. One comparatively small dealer with less than 20 tons in his yard has 1500 tons on his books and continues to take orders.

The operators are commencing to severely criticize the retail trade for unwise distribution of shipments. They can point to cases of which they have knowledge where a householder has more coal stored than could possibly be used in one winter. It is known that many consumers had their coal bins enlarged and then filled and openly boast of the quantity they have in their cellars. Such cases, and they are far from uncommon, are not entirely the fault of the dealer. Often these stocks have been delivered by more than one retailer.

Small dealers cite many cases where two or more families of the working class usually occupy a single house. Now with steady work and large wages each has a home to be heated. The few unoccupied small houses in the city at the present time substantiate this belief. This explains, it is believed, why in face of the fact that the anthracite mining companies are breaking records they are still unable to meet the demand.

This week the largest shipping company again made the statement that not one of its regular dealers had received less coal this year to date than during any corresponding period of any year it had been selling to them. Yet it is a fact that this company's trade often occupying railroad-owned yards is the shortest of fuel. Undoubtedly the coal has been shipped and just as certainly it has been sold, for the yards are almost bare. The dealer who usually needed 10 cars in October is now calling for 50, and so on in proportion.

Most dealers still lean to the notion that the big companies will flood this mar-

ket soon, just as soon as the Northwest is taken care of. There can be no denying that with two days' shipments turned to this market the dealers would have more coal than they could handle in the short time required by the railroads. However, with the modified lifting of the embargo on Canadian shipments there is apparently small prospect of big shipments here until well after the first of next month.

The big companies are upset this week by requisitions received from the Government for 100,000 tons of broken coal to be shipped to the various naval stations throughout the country. The orders call for deliveries to begin at once. This is a serious matter for two reasons; not only will it cause an additional heavy demand for cars, but it will be the means of greatly reducing, if not altogether stopping for a while, the shipment of this size on important contracts. It is feared this will cause a further drain on the other sizes.

Large shippers report there is no let-up in the demand from New England, and in fact all points have been receiving heavy shipments all summer long, and would be even heavier now were it not for car restrictions. Some report the Pennsylvania R.R. is supplying its full quota of cars with the understanding that the coal is to be loaded for Lake ports. Others report collieries shutting down and on short time because of lack of cars. Relief is promised shortly, but certainly this will not take place before the closing of the Lake season.

As to sizes, any size is acceptable. Egg is as short as it has been for weeks. Stove is scarcer because the cantonments are calling for large tonnages, which are now diverted. Chestnut is growing in popularity if only because pea is scarce.

Following a meeting of the coal exchange this week the dealers are about to announce their new prices in accordance with the Government ruling. Practically all of them have now completed their figures, covering the 1915 business, on which the new prices are to be based. These figures show some odd results. One dealer, who has been buying stove coal at \$4.70 at the mines and egg at \$4.45, will now be compelled to sell stove coal cheaper than egg, his prices figuring out \$8.35 for stove and \$8.45 for egg, all of which is due to some favorable buying of egg coal in 1915. There will hardly be two dealers who will have similar figures. In order to give some idea of the new prices, we quote the figures of a representative dealer as follows: Egg, \$8.45; stove, \$8.55; nut, \$8.70, and pea coal, \$7.20.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for Tide, are as follows:

	Line	Tide	Line	Tide
Broken.....	\$4.55	\$5.70	Buck.....	\$2.90 3.50
Egg.....	4.45	5.75	Rice.....	2.40 3.40
Stove.....	4.70	6.00	Boiler.....	2.20 3.30
Nu.....	4.80	6.05	Barley.....	1.90 2.15
Pea.....	3.40	4.30		

Bituminous—If anything, the outlook for producers has grown less promising of late. Frankly, they are discouraged, for while they all believe they will be granted higher prices, yet these have been so long delayed that the delay is proving costly to them. With the ordering of preferential shipments on account of railroad fuel the commercial allotments have been seriously cut. No surprise was manifested at this ruling, as with its inauguration some weeks ago on the Baltimore & Ohio R.R. the rumor became quite strong that a general order would be issued.

With the allowance of an additional 75c. per ton to the wagon mines, making their f.o.b. price \$2.75, strong efforts have been made locally by brokers and by consumers to connect with some of this fuel. Thinking this increase would be an incentive to these small operations to start up with increased capacity, many local plants have sent representatives into the field to pick up an occasional car. In this way they have come into direct competition with the brokers, who also have their men on the ground. The fact that this coal must be loaded into box cars, according to the Government ruling, does not seem to affect the situation at all, so far as the consumer is concerned.

Visits to the local offices of the mining companies reveals the car supply of late to have been not more than 35 per cent. at the mines. Particularly bitter in their criticism of railway conditions are those concerns with mines in the Fairmont region of West Virginia. Based on carefully compiled figures they claim they are now 2400 cars short on their actual percentage. So with from 50 per cent. to 60 per cent. of their output under contract it can be seen that there is little likelihood of their having any free coal to offer at the Government price for some time.

BALTIMORE

Many uncertain elements exist in the soft coal trade. Supplies very light. Hard coal deliveries far behind requirements.

Bituminous—The soft coal trade of Baltimore is still in most uncertain shape. As far as supply is concerned, the conditions are worse than ever. Very little coal is coming through even on high-priced contracts. Not only is there no Government-priced coal for sale here, but there is practically no coal of any price. Consumers are begging for fuel. Many that have used soft coal in the past and who find that their contract connections can not supply their needs now, are turning toward hard coal whenever they can corral any. A firm in the outskirts of the city had motor trucks going around the early part of the week, buying up any hard coal that yards could offer, and at healthy prices. Not a few consumers, many of them of importance, are on the ragged edge of supply, and are threatened with shutdowns now that it seems impossible to buy coal in even car-load lots.

Following preferential treatment as to supply given certain railroad interests by the Fuel Administration, there is more talk that a regular list of preferential plants, here and in other parts of the country, may shortly be announced. This would require curtailment of a set percentage of contract obligations, and such an order would not surprise the trade. For the time being, however, the main trouble seems to lie with poor rail movement of coal. Since the Quemahoning Coal Co. withdrew its suit against the Tidewater pool arrangement, it is understood that considerable coal has been handled through the pool in a manner that insured standard shippers getting through much of their product to their own customers. At present, however, the Tidewater piers are practically swept clear of coal.

Anthracite—The hard coal dealers are still selling what supplies they can get through at the October schedule, when any coal is for sale. The greatest problem, however, has not to do with price for the moment, but covers the great shortage of deliveries here on orders placed long since on the books. Many big contracts are entirely unfilled. This lack of coal covers hotels, institutions and hundreds of private homes. Coal men are letting some have a small part of the fuel they will need, while others have been unable to get any coal. The situation is indeed threatening, despite announcements from Washington that everybody will be taken care of. The contiguity of Baltimore to the coal fields may be a great factor in preventing a real famine here, but the outlook, to say the least, is uncomfortable.

Lake Markets**PITTSBURGH**

New coal prices not yet announced. Export embargo against Canada removed. Traffic conditions worse.

The Pittsburgh coal trade continues to wait on the revised prices it has been expecting for three or four weeks past would be announced at Washington. That there will be an upward revision is hardly doubted, as there have been revisions for the Far West as well as for Tennessee, Kentucky and Virginia. Forecasts continue that the increase will be from 35 to 65c. over the \$2 basis now prevailing.

A limited tonnage of spot business is reported, but there is probably more business being done than comes to light. Sellers are, however, reserved, and particularly so on account of expecting an increase in the Government price any day. Production on the whole is at a fairly satisfactory rate, but distribution is quite unsatisfactory to the line trade, as much coal is being diverted to the Northwest. The embargo against exports to Canada has been removed, on the basis Canada being furnished as much coal as last year, plus the expected 10 per cent. increase in production this year. As Canada had run ahead of this proportion the exports are likely to be light for a time.

Traffic conditions, already bad, have gotten worse in the past week or two, railroad yards being congested, and embargoes are numerous. Consumers are incommoded more by embargoes than by a general shortage of coal.

BUFFALO

Still much complaint of inability to get bituminous at the regulation price. Jobbers dispute the idea that the output is holding good. Miners indifferent. Anthracite moving fast by Lake, slow in the city.

Bituminous—The situation does not change materially. Nobody in the trade

is able to say what will be done. It is a certainty that at least some consumers are running short of their needs and are becoming uneasy, especially as they do not see any disposition on the part of the authorities to help them. Here and there orders have been given to ship coal to a town or some large concern, but the order against reselling has cut off some small consumers, it would seem hopelessly. On that account the situation becomes worse from week to week.

At the same time the difficulties with the miners and the railroads continue. The men make every excuse for not going to work. They earn plenty of money in a short time and cannot be made to see that they are needed to do their best. Coal shippers are agreed that the Government ought to take hold of them as it has of other slackers.

The chief complaint against the railroads is that they pay no attention to the mines with which they have no contracts. Available cars go to the mines they get coal from and the other operators see their men scatter and their operations stop, with small prospect of getting back to work again.

The bituminous prices are still nominally at the Government figures, but only now and then a car can be obtained, as it is still claimed that all the output goes to fill contracts.

Anthracite—Much complaint still exists locally that coal cannot be obtained, but the shippers do not pay much attention to it. They say first that the city has been furnished considerably more coal than ever before and also that it is not possible to discover who is without a supply, as so many people will pretend to be out when they are not. Besides the Government authorities are looking sharply after the Lake shipments and will not allow them to lag. A local anthracite company recently was not able to guarantee the loading of a vessel which it had engaged on contract, so the coal committee at Cleveland ordered her there to load bituminous, though it is not at all certain that she got out any sooner on that account.

Without giving out the amount shipped to Canadian ports the custom house reports the weekly shipment of 143,500 net ton of anthracite by Lake, of which 58,500 tons cleared for Chicago, 46,000 tons for Duluth and Superior, 24,400 tons for Milwaukee, 10,000 tons for Sheboygan, 2600 tons for Kenosha and 2000 tons for Gladstone.

Freight rates are active at former figures, \$1.25 for Kenosha, 75c. for Sheboygan, 60c. for Chicago, 50c. for Milwaukee and 45c. for Duluth.

CLEVELAND

Embargo lifted on Lake shipments to Canadian ports. Car supplies at Ohio mines improved. Governor Cox issues order to relieve Ohio situation.

The embargo on coal for shipment via Lake to Canadian ports was lifted on Oct. 10, and since that date the Lake end of the business has gradually worked back to almost normal conditions. While the embargo was only in effect ten days it disarranged this branch of the business to a considerable extent by forcing shippers to shift cargoes to American ports, which resulted in bunching vessels and caused considerable delay at unloading docks. However, now that the Canadian embargo has been raised and the distribution of all Lake coal for the rest of the season placed in the hands of Fred C. Baird, commissioner of the Lake Erie Bituminous Coal Exchange, it is expected that Lake shipments will go forward with a rush from now till close of navigation. As a rule navigation closes on or about Dec. 5 but it is intended to continue shipments after this date this year, providing the weather is favorable in order to move as much coal to the Northwest as possible.

Car supplies at the mines in the eastern Ohio district improved somewhat the past week and averaged about 65 per cent. of the capacity of the mines.

Governor Cox requested all Ohio mines to ship 20 per cent. of their production on Oct. 16 to retail dealers in Ohio to relieve local conditions. This will provide about 150,000 tons for domestic consumers, providing the railroads do their part and furnish the mines with a liberal supply of empty cars.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8	\$3.30	\$3.05	\$2.80
Cambridge	3.30	3.05	2.80
Middle District	3.45	3.20	2.95

Jobbers' prices are 15 cents per ton higher than the above prices.

TOLEDO

Demand for coal increasing. Many factories on the verge of closing, owing to lack of fuel. Supply for this section of Ohio estimated about 75 per cent. short of demand.

Wholesalers assert they do not know where sufficient coal will be found to supply immediately the demands of factories and public utilities. It appears all the legislation yet passed will not solve the problem of furnishing coal to the many concerns which are on the point of closing down for want of fuel. Recently, about 50 cars of coal arrived here and were snapped up so quickly that it is evident consumers are in a bad way.

The steam trade continues to appeal for coal, and in several instances relief has arrived just in time to prevent the closing down of the plants. Officials at Columbus issued warnings recently to the officials of several small towns in this vicinity who have confiscated coal on railroad sidings for local needs. In a number of villages lighting plants and water-works have been forced to close, owing to lack of fuel. Dealers say mine operators must first fill the orders due on old contracts, and as labor is not so plentiful as in the past, nearly all the coal mined goes toward filling these orders.

The retail trade is practically under Government control in this city. After an appeal had been sent to the Governor of the state, and some 30 cars of coal started on their way for Toledo, a commission, consisting of city officials and several wholesale coal dealers, drew up a list of retailers to whom the coal would be distributed. A price of \$5.75 per ton, to the consumer, was agreed upon after some argument. Hardly a car of anthracite has appeared upon this market in the last 30 days, and it is the opinion of most of the dealers that there will not be much coming until well into December.

The Northwest is assured of a plentiful supply of coal for the coming winter. Vessels continue to leave this port loaded to capacity. Docks are working night and day to unload the coal which the railroads are delivering to them. The Government shows no inclination to modify the order for priority of Lake shipments, and all available coal continues to the Upper Lakes. An embargo was recently placed upon coal which has been going to Canada, and for the recent past no vessels have taken cargoes for that country.

Prices on tons, f.o.b. mines, are as follows:

	Mine-Run	Lump and Egg	Nut and Slack
Hocking and Pomeroy	\$2.00@2.35	\$2.25@2.60	\$1.75@2.10
Kentucky	1.95@2.40	2.20@2.65	1.70@2.15
Pocahontas	2.00	2.25	1.75
West Virginia splint	2.00	2.25	1.75

DETROIT

Municipal coal director is named in effort to supply thousands of Detroit families with coal. Little anthracite or bituminous is arriving. Lake movement holds in volume.

Bituminous—Deficiency in supply of steam coal continues to create complaint among consumers and among jobbers and wholesalers in the Detroit market, despite the fact that municipal officials and representatives of the Detroit Board of Commerce, who appealed to H. A. Garfield, Federal coal administrator, recently, were informed that Detroit seemed to be pretty well off as regards soft coal. Jobbers say it is practically impossible to obtain steam coal, except for those holding contracts closed prior to Aug. 21 and that no free coal is being brought to Detroit. The Board of Commerce investigators say a number of industrial plants have closed because coal was unobtainable and that many others have only two or three days' supply on hand and no assurance they will get more. Meanwhile transportation conditions present a series of embargoes on lines south of Toledo over which coal should be coming to Detroit and other points in Michigan. Jobbers say the embargoes are due in part, at least, to the railroad lines routing cars into congested areas instead of sending them directly through to Detroit.

Anthracite—Interest of the citizens generally as well as that of city officials and all classes of coal dealers, is just now centered on getting anthracite at once and in quantity sufficient to prevent suffering in 50,000 or more homes now without fuel. Detroiters who visited Washington understood they had assurance that 120 cars a day would be started moving this way at once. A message from one of the fuel administration workers reports arrange-

ments have been made to get 35 cars from one mine and that others say they already have sent more coal to Detroit than in any year since 1913. James Couzens, police commissioner, and a former coal man, has been made fuel dictator with authority to make every effort to get coal and supervise distribution thereof. He has asked co-operation of the retailers and other coal dealers in solving the problem.

Lake Trade.—Coal is being moved up the Lakes in good volume. Despite occasional delays in delivery at loading docks, shipments aggregate nearly 1,000,000 tons a week. Vessel capacity is obtainable in ample supply to handle the cargoes promptly as they arrive at the dock.

COLUMBUS

The Ohio coal trade is still mixed up between Government regulation and state pressure to give domestic users coal. The cold snap made the situation critical.

Uncertainty still characterizes the Ohio coal trade. The conflict between Federal and state officials over the consignment of coal for domestic and steam purposes has now been partially settled by orders to divert a portion of Ohio's production to communities within the state. This was brought about by the strong pressure, showing the dire necessity for fuel in the state. As a result of this agitation orders were issued for communities, where necessity demanded, to be taken care of under the direction of the Ohio Clearing House.

Domestic trade is still much "up in the air," so to speak. Few dealers have any stocks and until the recent modification of the priority order were unable to secure them. Retail prices are still firm, although some efforts are being made in certain localities to enforce the Governmental method of price regulation. In Columbus Pocahontas is scarce and in good demand. It is retailing at \$6.75 to \$7. There is also a good demand for West Virginia splints at \$6.25 to \$6.50. Hocking lump is selling at \$5.25 to \$5.50, while mine-run is quoted at \$4.95. Anthracite is scarce and high.

The steam trade is also unsettled as many steam users have been compelled to call upon the Ohio Clearing House for fuel supplies to keep their plants going. This is especially true of power and light companies and public institutions. In fact, Columbus lighting arrangements as well as street-car traffic has been deranged by lack of adequate fuel. Emergency orders have been taken care of and not a great deal of inconvenience has been caused up to date.

The school situation is also precarious. Many of the schools of Columbus have been compelled to close because of lack of fuel. Rural dealers are also clamoring for fuel.

It is estimated that railroad consumption in all sections of Ohio is 15 per cent. above normal and this is having its effect on the general trade. Munition and Government-order plants are demanding priority shipment and in many cases are receiving it.

Production in Ohio has been slightly reduced from the previous week. This is especially true in eastern Ohio and Massillon districts where cars are short. The Hocking Valley and Pomeroy Bend districts have produced about 75 per cent. of normal during the past week.

CINCINNATI

Freezing weather and limited fuel supply have emphasized the danger of an actual shortage, and seizure of coal passing through is suggested as the only remedy.

Snow on Oct. 12, the second time in 30 years that snowfall has occurred so early in Cincinnati, accompanied by a temperature below freezing, brought forcibly to the attention of the trade and of the city authorities the alarming state of the fuel situation. Dealers have virtually no coal to deliver to domestic consumers, while many large industrial concerns have only a supply for a day or so, especially since the gas company has cut off industrial consumers from the use of natural gas.

Conferences between coal men and the city authorities have developed no remedy for the situation, and this city is contemplating action similar to that of other Ohio municipalities, which have seized coal on trains passing through to the Lakes and the Northwest. The mayor has been advised by the city's legal department that in an emergency he may lawfully take such action, and as heavy trainloads of coal are constantly passing through Cincinnati, a supply sufficient at least to meet the emergency may thus be secured.

With an actual shortage of coal, business men are now beginning to criticize the Government for fixing an inadequate price for coal at the mines and thus indirectly bringing about a limited production, at a time when the largest possible production was essential. Prices now cut no figure.

LOUISVILLE

Cool weather, heavy railroad confiscation and reduced production make a very tight market. Southeastern field's output slow coming out. Famine conditions throughout state.

A sudden arrival of freezing temperatures, coming on the top of a week's steady confiscation of mine-run by railroads and with the still short production in the southeastern Kentucky-Tennessee field, has brought this coal market to a hand-to-mouth condition. There is a large and insistent demand for supplies from industrial consumers, numbers of whom have been endeavoring to accumulate reserve stocks with poor success. The resumption of work in the Southeastern-Kentucky-Tennessee field has not up to this time served to bring any considerable relief to those sections of Kentucky largely dependent on that field for its supplies. Most of these mines resumed with two months bookings and many of them are operating with working forces far below normal. That prices on coal from the greater part of this field will be on the higher level has been assured by the recent detailed announcement. A tight domestic market exists in Louisville, due, following the southeastern tie-up, to the fact that the Louisville & Nashville for a week or more has been confiscating large quantities of western Kentucky coal. The entire mine-run output of one large operating company has been taken by the railroad company. Louisville retailers have come to the point where they are taking orders subject to ability to fill them and at prices prevailing on the date of delivery. For some time sales have been made subject to rebates or added charges according to the prices which the Fuel Administration is to fix.

Two months, at least, of mild weather, according to the views of Kentucky coal men, is all that will prevent a desperate condition in the market. All over the state reports of shortages and exhausted supplies are reported. Screenings from western Kentucky are somewhat easier and freer in supply, while the production from the other section of the state is looked to to bring relief from the pressure, provided reasonably moderate weather prevails.

BIRMINGHAM

Inquiry strong from the small consumers and industries not protected by contract. These are making urgent and persistent appeals for fuel. Improvement in production slight in contrast with abnormal requirements. Deficiency in output largely due to disinclination of miners to work regularly.

Conditions in the local market are gradually becoming more settled, with the wholesale prices definitely fixed for a time. Brokers and sales agents are taking on all the business that can be handled by the mines, which, however, is but a small proportion of the tonnage being called for in the district. Inquiries from outlying districts for both steam and domestic coal are urgent and the need of fuel by all non-contracting consumers is fully reflected in the insistent appeals that are being made.

Retail dealers generally are in a dilemma over the price-fixing program and are evincing little desire to stock up further until something more definite is learned as to the prices they are to be allowed to charge the domestic consumer. State Administrator Kennedy is arranging for the appointment of committees in the various districts, who will formulate the price schedules, but it is likely to be some weeks yet before definite action will be taken. Retailers are understood to be filling orders at present prices subject to adjustment to conform with the official schedules.

In announcing the prices of coal at the mines in the Alabama field, Administrator Garfield stated that current prices on blacksmith coal would be allowed to stand. However, realizing the necessity of placing some restrictions on this grade of coal and thus prevent a runaway market, producers have voluntarily made a maximum quotation of \$5 per net ton mines on blacksmith coal, the lower grades to be sold around \$4.50 per ton.

Labor conditions at the mines have improved much in that there is little dissatisfaction in the ranks of the miners and company employees, and while there is a shortage of labor at many points, a large percentage of the deficiency in output is attributable to the failure of the men to work full time. The high rate of compensation now being received by the men engaged in the coal-mining industry is apparently decreasing the efficiency of the working forces and encouraging irregularity.

Coke

CONNELLSVILLE

Car supply order has no appreciable effect. Slightly increased spot turnover. Production 16 per cent. short of last year.

No material improvement in coke production and shipments has followed the order of the Priority Board of a week ago, for a 100 per cent. car supply to the Connelville coke region. There is a divergence of view as to how much an increased car supply would help production, many interests asserting that car supplies have been nearly sufficient to take care of all the coke that can be produced with the labor supply available.

The volume of sales of spot furnace coke has increased further, but is still relatively small. While in some quarters operators are charged with shipping excessive quantities on their high priced contracts and holding out of the market coke that ought to be offered for spot sale, others claim that some furnaces having high priced contracts are trying to buy spot at \$6 and evade their contracts. It is claimed that if such cases were eliminated the volume of spot inquiry would be greatly reduced.

It remains the fact that the curtailment in pig iron production, below the blast furnace capacity available, due to shortage of coke, is chiefly with the steel interests, which simply use such coke as they produce themselves and do not buy in the open market, and is much less with the merchant furnaces which buy all their coke, on contract or otherwise.

Scarcely anything is being done in foundry coke, as the Government has not yet announced a differential for this grade. The majority of operators act on the view that they are not permitted to sell foundry coke at above \$6, hence they do not sell at all, but a few have taken the stand that they are entitled to charge a fair differential of their own making and have been selling a little coke. The dealers, who normally handle much of the foundry coke, are doing scarcely anything as their position has not been defined. As a result of the conditions many foundries throughout the country are becoming short of coke and are in need of relief.

We quote the coke market at the Government price, \$6 per net ton at ovens.

The "Courier" reports production in the Connelville and lower Connelville region in the week ended Oct. 6 at 352,471 tons, an increase of 5046 tons. Shipments are not reported for the week, railway returns not having been received. The "Courier" reports output for the first nine months of this year at 13,856,365 tons, or 2,724,873 tons less than in the same period last year, a decrease of 16 per cent.

Birmingham.—Coke production in the Birmingham district is showing some improvement, but the supply of free coke continues much short of the demand. No action has yet been taken in respect to the fixing of prices on foundry and furnace coke, the figures which have ruled for several weeks still obtaining, but steps in this direction will probably be taken in the near future. Furnace coke will probably be scheduled at around \$7.50 per net ton ovens, with a differential of something like \$2.50 per ton in favor of foundry product.

Buffalo.—The situation is much the same as with bituminous coal. Prices are nominally \$6 plus the rail freight from Connelville of \$1.85 and possibly something for selling, but as to that nobody knows, as it is claimed that not a ton of free coke has been sold here since the reduced price was made. So the division of prices to suit the various grades does not need to be made. Somehow the coke users manage to get a supply and that is the main consideration. Iron ore by Lake continues to arrive freely, the receipts for the week being 257,187 gross, according to custom house figures.

Middle Western

GENERAL REVIEW

Retailers in confusion due to their inability to determine prices and to secure adequate supplies. Labor and car shortage steadily growing worse. Embargoes seriously hindering shipments westbound.

Retail coal dealers in Chicago and territory adjacent thereto continue to be much confused as to the prices that should be charged by them, and many find the prices, as fixed by the fuel administrator, less than the cost of handling. Dealers are making desperate efforts to secure coal and do not hesitate to accept any kind or grade the shippers have to offer. Householders are

beseeking the retailers in an endeavor to secure deliveries, and in most instances deliveries are being made only in half-ton and ton lots—the idea being to supply as many customers as possible with the meager amounts on hand.

The shortage of cars in the Indiana mining field has been keenly felt and it is estimated that production has been curtailed at least 50 per cent. on this account during the past ten days. The car supply for other than railroad loading is down to the lowest figure in months. The situation in Illinois is somewhat better except that the labor shortage is growing more acute.

The movement of Eastern coals to the Western market has been almost nil. Ohio coal has been moved entirely to the Lake trade and none of it has been available for shipment to this territory. West Virginia coals have been cut off due to congested traffic, and to demands from other markets. Anthracite via all-rail shipment came through in limited amounts only, while arrivals via the Great Lakes were insufficient to take care of local demands. Numerous out-of-town dealers have visited the Chicago wholesale trade in an endeavor to obtain even a limited tonnage to relieve the prospect of serious conditions at a later date. There is absolutely no free coal being offered, and jobbers having contracts for the delivery of Eastern coals are unable to satisfy their customers and many of them are 30 days behind on contracts.

CHICAGO

Chicago retailers make price protest. Garfield asked to amend order fixing selling price on retail coal. Retail stocks at low ebb. Wintery weather causing unprecedented demand for this season of year.

The Chicago Coal Merchants Association in a recent telegram to Dr. Garfield protested against the method of retail regulation, as follows:

"Please refer to your postal telegram of fourth re retail coal in Chicago district. Owing to peculiar conditions it becomes impossible in many instances to operate under your plan outlined in your order of Oct. 1. Inasmuch as no state administrator has been appointed to whom appeal may be made for modification of order in such cases the only practical plan available to those dealers so situated is to fix prices based on cost of coal to dealer plus a just and reasonable sum for his profit in the transaction as provided by Sec. 25 of the act.

"All Chicago dealers earnestly desire to cooperate with Government to fullest extent possible, but owing to demoralized condition of coal trade in Chicago during 1915 the 30 per cent. advance in gross margins will not cover the cost of handling and distribution in many cases. All sales made at prices other than those contained in your order will be based upon condition that prices will be readjusted to basis established for October, 1917, in accordance with the act as fixed by state administrator, when appointed. Our desire to cooperate forces now to sell at prices which may not permit continued operation of business."

The retailers belonging to the Coal Merchants Association in Chicago, have posted the following notice:

"The prices on all orders accepted by us on and after Oct. 1, 1917, are tentative and will be subject to readjustment to the basis fixed by the Federal Fuel Administrator, in accordance with the law, after his appointment."

Chicago's first cold snap of the season brought a deluge of orders into the offices of the city's retailers. A general shortage made it impossible to fill all demands.

Quotations in the Chicago market are as follows per net ton f.o.b. cars at mines:

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Cartersville	Grundy, LaSalle, Bureau and Will
Steam lump.....	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35	\$2.20@2.35	\$2.65@2.80
Domestic lump.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Egg or furnace.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Small egg or nut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Stove.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Chestnut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Pea.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed egg.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed stove.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Washed nut.....	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.20@2.35	2.65@2.80
Mine-run.....	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	1.95@2.10	2.40@2.55
Screenings.....	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	2.15@2.30
Washed slack.....	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	1.70@1.85	2.15@2.30

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hoeking	West Va. Splint
Dom. lump.....	\$2.20@2.35	\$2.20@2.35	\$2.65@2.80	\$2.25@2.40	\$2.25@2.40	\$2.60@2.75	\$2.40@2.55
Steam lump.....	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Egg.....	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Small egg or nut.....	2.20@2.35	2.20@2.35	2.65@2.80	2.25@2.40	2.25@2.40	2.60@2.75	2.40@2.55
Mine-run.....	2.20@2.35	2.20@2.35	2.40@2.55	2.00@2.15	2.00@2.15	2.35@2.50	2.15@2.30
Screenings.....	2.20@2.35	2.20@2.35	2.15@2.30	1.75@1.90	1.75@1.90	2.10@2.25	1.90@2.05

MILWAUKEE

Cold weather stimulates demand for coal. Prices hold steady. Government investigating.

The advent of cold, snappy weather, accompanied in many parts of the state by snow and ice, brought a deluge of orders and hurry-up appeals to coal men and gave them a mild taste of impending winter tribulations. The temporary chill served to show up the points in the interior which are weak in supplies and every effort will now be made in their behalf.

Receipts of Illinois coal continue to increase. In some cases it is being piled up on docks which in former years have been supplied by Lake. The supply of hard coal is still inadequate, in spite of increased receipts. Soft coal is accumulating to a marked extent, however, and from appearances there will be enough bituminous coal to supply those who are unable to procure anthracite and at the same time meet industrial needs.

Prices continue steady. Dealers continue to hold that ruling rates are equitable when considered in connection with the prices fixed at the mines by the Government. The reduction of 60c. in pea coal has little meaning here for the reason that there is hardly a ton on the docks.

W. N. Fitzgerald, state coal administrator, is making an investigation of the price methods of Milwaukee dealers. He held a conference with local dealers on Oct. 13, at which the latter protested vigorously against Dr. Garfield's allowance of 30 per cent. increase over the margin of profit in 1915. They claimed that coal dealers made no money during that year and that, owing to the advance since that time of everything entering into the conduct of the trade, they could not continue business at the proposed rate of profit. The matter will be referred to Washington for adjudication.

ST. LOUIS

The most critical condition that has ever concerned the public in the Central West as regards the fuel problem prevails now. No available free tonnage on the market. Railroad business given the preference, with an unprecedented demand for all grades, and very little coming. Storage coal being drawn heavily upon.

Nothing in coal trade history compares with the situation that exists today, in this territory. Advice by newspapers and other agencies so influenced the public that it failed to buy the tonnage of coal in the summer months that it has bought in the past. Thus the demand now is so far in excess of the supply that it will take from six to eight weeks to get caught up, and it is doubtful, if conditions continue, whether there will be any catching up at any time this winter, unless stringent measures are taken to prevent the Northwestern railroads from storing coal that is not necessary and depriving the public of its actual wants.

Reports from the surrounding territory indicate that there is an actual coal famine that will continue all winter, and some places will be without coal altogether.

The M. & O. R.R. and Illinois Central are refusing to allow their equipment to go to places in Missouri that have depended upon these railroads for fuel in the past. Furthermore, on account of the impossibility of getting Cartersville coal, some points that have no rates on coal from the other districts, are going to go absolutely without fuel.

No hard coal is coming into the country outside of St. Louis. There is no possibility of any coming, and the same pertains to West Virginia and other Eastern fuels.

The tonnage of Arkansas in this territory is extremely tight and at prices that only the wealthy can afford to pay.

In St. Louis proper at the present time there is much suffering among the poor, and exorbitant prices are being obtained for coal by the bushel—prices that show an average of from \$8 to \$10 a ton from coal peddlers, and in many instances it is impossible to obtain coal from them.

Measures may be taken by the authorities in Illinois districts and in Missouri through which this coal passes, to confiscate it if the public wrath is aroused, and this can be done with justification.

Mines that always in the past have furnished the domestic coal are now obliged against their own will to furnish railroad coal or shut down, and the Government fails to protect these operators and the public in any way.

Authorities through the newspapers advised the public to refrain from buying coal in this territory throughout the summer months and now the public is deprived of the coal that should rightfully belong to it.

The situation is one that is going to require immediate attention, or the results of this indifference will be appalling.

The yards in St. Louis are without coal. The dealers are refusing to take orders, and all are oversold for from three to six weeks, and only regular customers will be taken care of.

There are no regulations here to prevent the people, able to afford it, from hoarding coal, and this seems to be the aim now of those who can buy fuel in large quantities.

Standard coal went from \$4 to \$4.25 this week retail; Mt. Olive is \$4.50, and Cartersville \$5 to \$5.25.

The anthracite prices of \$11 for chestnut, and \$10.75 for grate, egg and stove, will by the recent Government edict be reduced, but there is no available tonnage and no orders are taken.

At points in Illinois the mayors of the different towns are threatening to open municipal coal yards and confiscate the coal that comes through. Rumors of like action are reported from points in Missouri, and the Attorney General of the state has given permission to local mines in this state where the cost of production is unusually high to raise their price to take care of the local demand.

The Government prices at St. Louis where there is any coal on the market per net ton f.o.b. mine are:

	Williamson and Franklin Co.	Mt. Olive and Staunton	Standard
6-in. lump.....	\$2.35	\$2.35	\$2.35
3x6-in. egg.....	2.35	2.35	2.35
2x3-in. nut.....	2.35	2.35	2.35
No. 2 nut.....	2.35	.....	.....
No. 3 nut.....	2.35	.....	.....
No. 4 nut.....	2.35	.....	.....
No. 5 nut.....	1.85	.....	.....
2-in. slogs.....	1.85	1.85	1.85
2-in. lump.....	.....	2.35	2.35
3-in. lump.....	2.35	2.35	2.35
Steam egg.....	2.10	2.10	2.10
Mine run.....	2.10	2.10	2.10

Washed:			
No. 1.....	2.35	2.35	.....
No. 2.....	2.35	2.35	.....
No. 3.....	2.35	2.35	.....
No. 4.....	2.35	2.35	.....
No. 5.....	1.85	1.85	.....

Williamson and Franklin County rate is 87½c. Other fields, 72½c.

KANSAS CITY

Critical situation prevails. Prices under Government regulation higher than before. Some real distress in evidence.

The critical situation forecast several months ago, for steam and domestic consumers of coal, is arriving in Kansas City. With prices fixed, and all uncertainty on this score removed, users who had held off purchasing are trying to get coal; and the supply is inadequate. The prices are on a higher level under Government regulation, than retail buyers paid in most cases last summer. Many large operators are barely able to keep up with their contracts, and those who usually mine only in the winter will have to bear the brunt of the current demand.

There is naturally a good deal of exasperation over the causes of the present inability of operators and dealers to supply demand; the chief cause has been the agitation of the public mind by agencies that insisted that prices would be lower this fall. Purchases were thus restricted at a season when the coal could more easily have been delivered.

Cold weather came in Kansas City Oct. 7; and it is said that real distress is already appearing because of short coal supply.